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2022/2023 University of the Pacific Stockton Graduate Catalog

University of the Pacific

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STOCKTON GRADUATE

Academic Divisions of the University

Arthur A. Dugoni School of Dentistry

Benerd College

College of the Pacific (Arts and Sciences)

Conservatory of Music

Eberhardt School of Business

Graduate School

McGeorge School of Law

School of Engineering and Computer Science

School of Health Sciences

School of International Studies

Thomas J. Long School of Pharmacy

Accreditation

University of the Pacific is accredited by the Accrediting Commission for WASC Senior College and University Commission (WSCUC), located at 985 Atlantic Ave., Suite 100, Alameda, CA 94501; (510) 748-9001.

University Campuses

Procedures, rules, regulations, services, tuition, etc. vary on the three campuses of University of the Pacific. This catalog states those for the schools and colleges listed in this catalog. The university reserves the right to change fees, modify its services or change its programs at any time and without prior notice being given.

Statement of Non-discrimination

Pacific does not discriminate on the basis of race, color, religion, national origin, ancestry, age, genetic information, sex/gender, marital status, veteran status, sexual orientation, medical condition, pregnancy, gender identity, gender expression or mental or physical disability.

In accordance with the above university policy and in compliance with all applicable laws, all educational services will be provided and all employment decisions (including recruitment, training, compensation, benefits, employee relations, promotions, terminations) will be made without regard to the individual's status protected by law. To the extent provided by law, the university will reasonably accommodate qualified individuals with disabilities that meet the legal standards for documentation, whenever the individual is otherwise qualified to safely perform all essential functions of the position.

This notice is given pursuant to the requirements of Title IX of the Educational Amendments of 1972, Title VII of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973 and amendments and other laws, orders and regulations governing discrimination. University of the Pacific has designated the Director of Human Resources to coordinate the university's efforts to comply with laws, orders and regulations governing discrimination. Any person having a complaint should contact in writing:

Director of Human Resources
University of the Pacific

3601 Pacific Avenue
Stockton, CA 95211

Because the catalog is compiled well in advance of the academic year it covers, changes in programs, policies and the academic calendar may well occur.

All catalog information is subject to change without notice or obligation.

About University of the Pacific

University of the Pacific is a nationally ranked comprehensive university and California's first chartered institution of higher learning. Established in 1851, Pacific has nearly 6,300 students and 11 schools and colleges across three campuses in northern California.

The majority of students and the Division 1 athletics program are based on the Stockton Campus, often cited as one of the nation's most beautiful college campuses. The Sacramento Campus in California's state capital is home to the McGeorge School of Law, the new School of Health Sciences and an array of graduate programs while the renowned Dugoni School of Dentistry is based on the downtown San Francisco Campus.

Pacific takes pride in providing the highly personalized and caring educational, social and residential environments of a small college combined with the choices and opportunities of a major comprehensive university.

Our Mission

University of the Pacific's mission is to provide a superior, student-centered learning experience integrating liberal arts and professional education and preparing individuals for lasting achievement and responsible leadership in their careers and communities.

Looking Forward: Innovating with the Times

Today, University of the Pacific is a highly ranked national university that remains deeply committed to its personal, student-centered approach. Campuses in Stockton, Sacramento and San Francisco strategically position Pacific in three of California's, and the nation's, most important and dynamic markets. The university earns widespread recognition for its deep commitment to teaching and learning, its history of innovation and the accomplishments of its alumni.

A History of Firsts

Since 1851, we've made the choice to look forward, create change and deliver education that puts our students first. We offer an experience that produces successful alumni who lead in their communities in California and beyond. Innovation isn't just how we do things — it's how we've always done them. Some of our firsts include:

- California's first chartered university
- California's first music conservatory
- California's first university to open its doors to women
- Nation's first to offer an undergraduate teacher corps program
- Nation's first to send an entire class to an overseas campus
- Nation's first to establish a Spanish-speaking, inter-American college
- Nation's first to offer a four-year graduation guarantee

Our Values

Student-Centered

Our students come first in everything we do. Student impact is an important consideration in every decision we make.

Academic Excellence

We have high academic standards with a focus on teaching, scholarship, and experiential learning. We invest in individualized attention and long-term relationships that build human potential.

Community Engagement

We are committed to learning from and enhancing our communities. We share a sense of purpose and pride in what we accomplish together.

Diversity and Inclusion

We respect all individuals and embrace the richness that our diversity brings to us as an educational community. We recognize and honor differences, creativity and bridging what is distinct to create an inclusive environment.

Integrity and Accountability

We demonstrate integrity in our actions. We strive to always do the right thing and hold ourselves and others accountable.

Respect and Civility

We demonstrate authentic respect for others and a willingness to engage in genuine discourse. We seek to establish common ground and ways to connect with others. We honor and value one another.

Our Schools, Majors and Programs

Pacific's 11 schools and colleges on its three campuses offer students their choice of over 80 programs of study, including 30 graduate programs and 10 accelerated program options. Students can go directly into certain professional programs, including pharmacy, dentistry and law, while accelerated programs in business, engineering and education make it possible to earn both undergraduate and graduate degrees in five years.

College of the Pacific (1851)

As the liberal arts core of the university, the College of the Pacific is the oldest and largest academic unit, offering courses in the natural sciences, social sciences, humanities, and the fine and performing arts. The college collaborates closely with Pacific's other nine schools and offers the foundational coursework for the university's professional programs.

Conservatory of Music (1878)

The conservatory prepares students to be performers, teachers, therapists, composers, scholars and music industry leaders. Our undergraduates gain experiences typically reserved for graduate students elsewhere. Whether as an operatic or musical theater lead in our productions, a member of a jazz combo or a partner in our student-run Pac Ave recording label, our students grow individually as leaders and together as collaborators.

Arthur A. Dugoni School of Dentistry (1896)

The Arthur A. Dugoni School of Dentistry is an internationally renowned institution of higher learning. We are committed to providing a world-class dental education for our students and comprehensive, affordable patient care for adults and children in a humanistic environment. Our school is also highly regarded for its accelerated year-round predoctoral program, where students are able to complete four academic years of instruction in three calendar years; and innovation in dental curriculum, including comprehensive patient care and competency-based education.

McGeorge School of Law (1924)

McGeorge School of Law is an internationally recognized leader in legal education. Its location in Sacramento, California's capital city, has shaped its development into a leading authority on public law, international

law and advocacy. McGeorge educates lawyers for large and small law firms, government agencies and corporate legal departments around the world. McGeorge's success is built on its distinguished faculty, high-quality students, committed and involved alumni, and beautiful, spacious campus with state-of-the-art classrooms and student facilities. McGeorge is a dynamic law school that is changing and growing to meet the challenges of the global economy and to educate the lawyers of the future.

Benerd College (1924)

Benerd prepares reflective, creative, caring and collaborative professionals. Our programs focus on flexibility and innovation to help you meet your educational and professional goals. We offer quality degree programs, continuing education courses, certificate programs and lifelong learning opportunities. Our graduate education degrees prepare students to deliver thoughtful, reflective, caring and collaborative learning experiences to diverse populations.

Thomas J. Long School of Pharmacy (1955)

The Thomas J. Long School of Pharmacy continuously adapts its programming to keep pace with the evolving health care industry, empowering students to succeed by providing access to state-of-the-art laboratories, hands-on learning and mentoring faculty. The school is home to an undergraduate Pre-Pharmacy Advantage Program, an accelerated three-year doctor of pharmacy program and a graduate Pharmaceutical and Chemical Sciences Program, as well as several fellowship programs.

Graduate School (1956)

The Graduate School supports and oversees Pacific's approximately 1,150 graduate students pursuing advanced degrees in more than 30 graduate programs on our Sacramento, San Francisco, and Stockton campuses. We are an administrative school that engages with students throughout their entire graduate life cycle, from the first time they reach out to inquire, all the way through graduation.

School of Engineering and Computer Science (1958)

The School of Engineering and Computer Science (SOECS) provides students with the technical skills to excel in their careers and the communication and leadership skills to contribute to their communities. At Pacific SOECS, we empower our students to solve problems through innovative and outside-the-box thinking. Students also get to "learn and earn" through a highly-regarded paid professional cooperative education program, built right into the curriculum, with one of the School's 200-plus industry partners worldwide.

Eberhardt School of Business (1977)

The Eberhardt School of Business cultivates the leadership skills and innovative spirit of its students while providing training in state-of-the-art business applications. We are a small business school with a global orientation, offering highly interactive classes with close working relationships between students and faculty. Our dynamic undergraduate and graduate degrees in Business Administration, Accounting and Sport Management are flexible and highly personalized, allowing students to tailor their educational experience and build a foundation for their careers.

School of Health Sciences (2020)

The School of Health Sciences prepares students to become health care leaders who promote lifelong wellness through discovery, innovation, and compassionate care. We offer several master's degree programs, such as the Master of Social Work program that prepares students to work in a variety of practices including mental health and aging, and an advanced degree in nursing, as well as doctoral degrees in audiology, occupational

therapy and physical therapy. A bachelor's degree in speech-language pathology is also offered. Some programs are accelerated with many offered in flexible formats.

Graduate School

<http://www.pacific.edu/Academics/Schools-and-Colleges/Graduate-School.html>

Phone: (209) 932-3297

Location: Stockton Campus Knoles Hall, Room 211

Unique and Distinctive Programs

The distinctiveness of graduate studies at Pacific lies in our academic programs, which emphasize creative scholarship and training of students in the principles and methods of research and professional competence. The goal of graduate education at the University is threefold: to excite the intellectual capacities of its students, to record and publish the products of intellectual inquiry, and to advance knowledge. To achieve this goal, the Graduate School encourages faculty to work closely with advanced students to create an environment congenial to advanced academic and professional study and to further scholarship and research.

University of the Pacific offers over 30 graduate programs on three campuses - Sacramento, San Francisco, Stockton - in business, education, engineering and computer science, health and natural sciences, law and public policy, music, and social sciences and humanities. Our programs lead to Master's and doctoral (PhD and EdD) degrees.

For a list of current graduate degrees offered, visit: go.pacific.edu/graduate (<http://www.pacific.edu/Admission/Graduate-Professional.html>)

Admission

University of the Pacific believes in giving a high priority to the enrollment of students from different backgrounds and demographic groups.

Admission decisions are based on the quality of the applicant's academic degrees and record, the personal statement of purpose, letters of recommendation from professors or others familiar with the applicant's academic work, performance in aptitude and achievement tests, relevant work experience, preparation in the proposed field of study, and on the appropriateness of the applicant's goals to the graduate program and of the applicant's research interests to those of its faculty. Some graduate programs have additional admission criteria that applicants must meet; visit the individual program catalog pages for program admission requirements. Satisfaction of minimal standards does not, however, guarantee admission.

International applicants or non-U.S. citizens who did not receive their bachelor's degree in the United States, should consult the information for international students at the end of this section regarding additional admission.

An application for admission made through the Office of Graduate Admission implies a student's intention to work toward an advanced degree. An applicant may apply to more than one graduate program; however, they must choose only one program upon confirmation of their intent to attend Pacific.

Types of Admission

Full Admission

A student that meets all the admission criteria of a program will be classified as a student in full standing. Students are advanced from this classification to candidacy for advanced degree upon formal notification from the department.

Conditional Admission

This classification includes students who have been admitted into a particular degree program but have not yet met all admission requirements. Reasons for conditional status may include:

- Incomplete application materials
- Bachelor's degree not posted at time of admission

All conditions will be listed on an applicant's decision letter. A student will have no more than one term to meet all conditions. If conditions are not met by the end of the first term enrolled, the student will be subject to disqualification. Once all conditions are met, the student will be classified as full standing.

Unclassified Student Admission

Students who have a bachelor's degree but do not plan to work for an advanced degree may take classes as an unclassified student. No more than 12 credits earned as an unclassified student may be applied toward an advanced degree. Unclassified students are required to meet the same academic standards as other graduate students. Unclassified students who later wish to work toward an advanced degree must make a formal application to the appropriate department or interdepartmental program and be formally admitted by the Office of Graduate Admission as a student with full admission status.

General Admission Requirements for All Applicants

To be considered for admission with full standing, applicants must have:

- a bachelor's degree or the equivalent from a regionally accredited institution of higher education in the United States, or an foreign institution of acceptable standing,
- adequate undergraduate preparation in the proposed major field or equivalent evidence of an appropriate background for undertaking as an advanced degree program, and
- a cumulative GPA of 2.65 or better in all post-secondary coursework **or** in the last 60 units of baccalaureate and/or post-baccalaureate work.

Some programs may have higher GPA requirements; review specific program information in the catalog for additional GPA requirements.

Applicants must complete a University of the Pacific Graduate Admission application. All applications must be complete, which typically includes: the online application, essay, official transcripts from each college or university attended, letters of recommendation, and test scores appropriate to the program. For transcripts to be considered official, they must be in an envelope that has been sealed by the issuing institution. Recommendations must be written within the last year. For detailed information on required graduate entrance examinations and recommendations, see the program-specific pages.

Note:

- Applications submitted or completed after the posted deadlines may be evaluated and students will be admitted on a space-available basis (depending upon the program).

- Students are not permitted to register until they have submitted their confirmation of enrollment, and have satisfied all admission requirements.
- Admission will be denied to applicants possessing bachelor's degrees with a significant amount of credit awarded for work experience that was not supervised by a faculty member of an accredited university nor evaluated in units which identify the academic content.

Application Fee

Each applicant must submit the appropriate application fee in U.S. dollars; the application fee is submitted as part of the online graduate application. Application fees vary by program.

Testing Requirements

Some programs may require a graduate entrance examination as part of the application requirements; refer to the relevant program pages for more information. All test scores must be official, less than five years old, and received by the Office of Graduate Admission prior to an admission decision.

Deferral of admission

Students who wish to enroll in a different semester from which they were admitted, must contact the Office of Graduate Admission to defer their application. Deferral of application is subject to program approval. Applications will only be deferred for up to one academic year. If a student does not begin coursework within one year of your original application for admission, they must submit a new graduate application for admission. Previous admission status has no bearing on the decision for admission in the future.

GPA Waiver Policy

Students who do not meet the GPA requirement for admission to a graduate program at University of the Pacific may petition for admission by submitting the GPA Forgiveness Form to the Graduate School. In order to qualify, applicants must meet the following:

- Have a minimum of five (5) years of professional experience after completion of the baccalaureate degree
- Have the support of the Program Director and the Dean of the school in which the degree program is housed
- Submit a letter of recommendation addressing their potential for success as a graduate student from their current or most recent supervisor

Submission of this form does not guarantee approval. Final approval is granted by the Dean of the Graduate School.

International Applicants

In addition to the application materials required for domestic students, international applicants must supply the following information to be considered for admission to University of the Pacific graduate programs six weeks prior to the program admission deadline:

Transcript Evaluation: A course-by-course foreign transcript evaluation is required for all institutions attended outside of the United States. Transcripts must be reviewed by one of the following approved foreign credential evaluation services:

- World Education Services (<https://www.wes.org/>), Inc. (WES)
- Educational Credential Evaluators (<https://www.ece.org/ECE/>), Inc. (ECE)

- Foundation for International Services (<https://www.fis-web.com/>), Inc. (FIS) Note: We will only allow evaluations done on photocopied transcripts on a case-by-case basis.
- International Education Research Foundation (<http://www.ierf.org/>), Inc. (IERF)
- Transcript Research (<https://transcriptresearch.com/>)
- Josef Silny & Associates (<http://www.jsilny.com/>)

Certification of Finances: Government regulations require that international students provide evidence that they are able to meet the financial requirements of their education, living expenses, and miscellaneous costs. This requires the submission of the "Certification of Finances" form (found here (http://www.pacific.edu/Documents/school-graduate/acrobat/Certification_of_Finances2.pdf)) in the amount to cover all of the aforementioned costs for one year.

English Proficiency Examination Results: Applicants whose native language is not English must submit official results (taken within the last two years) of one of the following in order to receive consideration for admission:

- Test of English as a Foreign Language (TOEFL)
- International English Language Testing System (IELTS)
- Duolingo English Test (DET)

Information about TOEFL can be located online at <http://www.ets.org/toefl> (<http://www.ets.org/toefl/>); information about IELTS can be located at <http://www.ielts.org> (<http://www.ielts.org/>); information about DET can be located at <https://englishtest.duolingo.com/>. University of the Pacific's TOEFL Code is 4065.

Minimum Score for Admission:

- TOEFL iBT: 80
- IELTS score: 6.5
- DET: 105

Some programs require higher scores; please contact specific departments for further information.

Minimum Score for Teaching Assistants:

- TOEFL iBT: 90
- IELTS score: 7.0
- DET: 115

Some programs require higher scores; please contact specific departments for further information.

Financial Assistance

Many programs offer graduate assistantships each year for students based on academic quality and experience in research. Graduate assistantships are available each year in many of the departments and schools where advanced degrees are offered. These graduate assistantships may be in the form of scholarship, tuition waiver, cash stipends for services performed, or a combination of those, depending upon each student's program and department recommendations. Please contact your program director(s) for details on graduate assistantships or other forms of financial aid.

Research awards are available for departmental or contract research in some fields. From time to time, fellowships are offered in certain

federally-supported programs in which University of the Pacific participates.

Graduate students who are U.S. citizens or eligible non-citizens may apply for federal student loans. For information, visit www.pacific.edu/financialaid (<http://www.pacific.edu/financialaid/>) or contact the:

Financial Aid Office
University of the Pacific
Stockton, CA 95211
(209) 946-2421 or financialaid@pacific.edu

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All graduate students are urged to read these general regulations carefully. Failure to be familiar with this section does not excuse a student from the obligation to comply with all the described regulations. [Note: These regulations do not apply to students in the following degree programs: DDS, MSD, JD and PharmD. For students in these programs, consult the respective program's academic regulations.]

Note that these Academic Regulations articulate minimum standards for graduate students at the University of the Pacific. Individual programs and schools/colleges may have additional requirements, so it is important for students also to know the particular policies and requirements of their individual degree programs. Although every effort has been made to ensure the accuracy of this catalog, students are advised that the information contained in it is subject to change. The University reserves the right to modify or change the curriculum, admission standards, course content, degree requirements, regulations, tuition or fees at any time without prior notice. The information in this

catalog is not to be regarded as creating a binding contract between the student and the school.

Academic Standing

All graduate students are expected to make satisfactory progress toward the academic degree for which they were admitted. Graduate students are required to maintain a cumulative minimum grade point average (GPA) of 3.0 and earn a grade of P (Passing) on all course work required for the degree to remain in good standing.

Students enrolled in the Master of Physician Assistant Studies, the Master of Laws (LLM), or the Juris Scientiae Doctor (JSD) programs should refer to the Academic Standing policies of their specific program.

Minimum grade requirement

Only grades of A, B, C, and P are acceptable for graduate credit. N is considered acceptable with respect to the minimum grade requirement.

Grades of C-, D, F, or NC (No Credit), are not accepted for graduate credit at University of the Pacific. (For definitions and more detail, see "Grading Policy" below.)

Students in a credential-only program must maintain a GPA of 2.5 and have a cumulative GPA of 2.5 or higher to clear their credential. Students in a basic teacher education credential only program who wish to do directed teaching in an internship must maintain a 3.0 GPA. Academic standing is determined at the end of each term (or after completion of six units during summer) to be one of the following:

- good standing
- probation
- dismissal

The criteria for these academic standings are based upon a combination of cumulative Pacific GPA and the term GPA. Criteria for the different academic standings are outlined below:

Probation:

Any graduate student who has completed six (6) or more course units of study and has a Pacific cumulative GPA below 3.0 or has earned a grade of NC in two separate terms is placed on academic probation. To be removed from probation, a student must achieve a cumulative 3.0 GPA (or higher GPA if required by the program) and not receive any grades of NC within completion of the next semester full-time course load (8 units or more). For degree-seeking students, the courses included in the probation removal plan must be approved by the program faculty. [Note: it is critically important for students to consult with the Financial Aid Office on the implications of academic probation on their financial aid].

Dismissal:

Students will be dismissed from their graduate program if either of the following apply:

1. a student on probation fails to be removed from probation after the probationary period;
2. the GPA of a student who has previously been on probation falls below 3.0 or the student receives a grade of NC in any class.

A dismissed student may appeal for reconsideration and possible reinstatement on probation, within the same school. Students who wish to appeal must follow procedures outlined in each program's policy. If no program-specific procedure is outlined, students must submit a written

petition to the Dean of their school. Enrollment eligibility during appeals process is determined at the program level.

A dismissed student may not enroll in any graduate program for a minimum of 12 consecutive months (waiting period). A student must reapply, meet current requirements for degree-seeking students, and be accepted by the University and the program to enroll for graduate studies following the waiting period. Schools or programs may develop additional procedures or requirements related to re-enrollment following dismissal. Some schools or programs may not permit reinstatement. Please see the appropriate school or program sections of the catalog for specific requirements.

In addition to the academic standing, other academic and non-academic reasons can result in a student's dismissal from a graduate program.

Refer to each school's code of student conduct/responsibility or any program-specific guidelines. In the absence of a school-specific code of conduct, the Honor Code in Tiger Lore applies.

Acquisition of Graduate Credit as an Undergraduate

Undergraduate students meeting all of the following requirements may apply by submitting the *Application to Receive Graduate Credit as an Undergraduate Student* to open a graduate transcript (i.e., receive credit in graduate-level courses toward a graduate degree) before the last day to add classes of the last semester as an undergraduate:

- The student must be within 9 units of completing the baccalaureate degree.
- The student must be in the last two semesters of the baccalaureate degree at University of the Pacific.
- An *Evaluation of Degree Requirements* form has been submitted to the Office of the Registrar prior to the last day to add classes. This must be submitted before or with the *Graduate Credit as Undergraduate application*. (This serves as permission by the undergraduate advisor for the student to take graduate-level coursework.)
- The student has been accepted into a graduate or credential program.

Graduate credit can be received under the following guidelines:

- The total number of graduate credits for the semester, including coursework completed at other schools, cannot exceed the maximum graduate course load for the department providing the graduate coursework.
- The tuition rate for the entire semester is at the undergraduate rate.
- No more than 12 units (16 units for student teachers) can be transferred from an undergraduate transcript into a graduate degree program.
- Graduate credit will only be granted for graduate-level (200 numbered) courses and above.
- Units cannot be retroactively transferred from an undergraduate transcript to a graduate program. Approvals for graduate credit must be obtained prior to the last day to add classes of the student's last semester.
- Coursework will not count toward graduate credit if the student fails to complete the bachelor's degree by the second semester of taking graduate courses.
- Graduate courses completed under this agreement will not be recorded by the Registrar as graduate coursework until the baccalaureate degree has been completed and matriculation into the graduate program has commenced. Grades from these courses will not be accounted in the undergraduate grade point average,

unless the bachelor's degree is not completed. Students who do not complete the bachelor's degree by the second term when graduate courses are taken cannot start a graduate program and cannot take additional graduate coursework until the bachelor's degree has been awarded.

- Students bear the responsibility of assuring graduate credits earned as an undergraduate student will transfer to or be counted as post-baccalaureate units by other universities or school districts.

Students are not classified as graduate students until they register for and begin graduate courses following the receipt of their bachelor's degree.

Changing Degree Programs

Graduate students are admitted to University of the Pacific for a specific degree program. With the exception of programs overseen by the same admission committee, if a student wishes to change a degree program, the student must submit a new application for admission, pay the application fee, and comply with all admission requirements. No more than nine (9) units of coursework taken in non-degree seeking, certificate-seeking, or previous degree-seeking status may be applied to any Master's degree and no more than 12 units may be applied to any doctoral degree. Students who wish to change degree programs overseen by the same admission committee may do so by using the Change of Program form available in the Registrar's Office.

Classification of Graduate Students

Full: All students admitted with full graduate standing.

Conditional Admission: Students may be admitted to some of the graduate programs on a conditional admission basis. See the Graduate Admission section of this catalog for additional information.

Credential: Students admitted to do post-baccalaureate work that leads toward an initial teaching credential, specialist instruction credential or services credential.

Clinical Competency

Many of the graduate programs offered at the University include experiential coursework. Prior to taking a course that includes an experiential component, students are required to demonstrate that they have the necessary skills, aptitude and competencies to successfully complete the course. Faculty of departments that offer experiential courses have the discretion of denying or terminating enrollment in these courses to students evaluated as not possessing the necessary clinical competencies. Procedures used to assess clinical competency vary across programs. Students may obtain additional information from their Graduate Program Director.

Students who do not demonstrate adequate clinical and experiential competency can be dismissed from a degree program, regardless of academic standing.

Commencement

Master's degree students who are near completion of degree requirements are eligible to participate in the May commencement exercises under the following conditions.

- A completed Graduate Student Application for Graduation has been submitted by the fall deadline

- All degree requirements will be met before the end of the last summer session of the same year. An approved plan of study that specifies all degree requirements will be completed in time and must be on file.
- The Master's degree oral examination, which includes thesis defense or written examination (where applicable), will be successfully completed by the Spring semester deadline for Written/Oral Exam – Thesis/Dissertation Defense.
- The student is in good academic standing.

On a case-by-case basis, special consideration is given for international students who complete degree requirements during the fall semester of the same calendar year. Approved Degree Evaluations must be on file by the spring semester deadline and the student must state they are unable to return to campus to participate in ceremonies in the spring following degree completion.

Doctoral degree students are ineligible to participate in graduation ceremonies until all degree requirements are met and the final dissertation has been approved. However, on a case-by-case basis, special consideration will be given for international and domestic doctoral students who will complete degree requirements by the end of the fall semester of the same calendar year. Approved programs of study must be on file by the spring semester deadline, and the student's Graduate Program Director must approve of the request.

Continuous Registration

All graduate students in graduate degree or credential programs must satisfy the Continuous Registration Policy of their respective programs from the time of admission until all degree requirements are met or their status as a degree- or credential-seeking student is terminated. This includes students who are completing preliminary or final examinations, or presenting terminal projects. If degree or credential requirements are completed between terms, the student must have been registered during the preceding term. International students may have additional registration requirements depending on their visa status and should consult with the Office of International Programs and Services to obtain current information.

Continuous registration is intended for students who have completed all required coursework. The Continuous Registration Policy can be met by registering for GRAD 200 (master's students) or GRAD 300 (doctoral students) through Inside Pacific (<https://insidepacific.pacific.edu/cp/home/displaylogin/>) at least one semester per academic year (Fall or Spring).

There is no limit to the number of times a student can register for GRAD 200/GRAD 300; however, Pacific's Residency and Time Limit policies must be met.

Students enrolled in GRAD 200/GRAD 300 may utilize library facilities, but are not entitled to:

- the use of other University facilities,
- receive a fellowship, assistantship, or financial aid, or
- take course work of any kind at the University of the Pacific.

Students should also be aware that registration in GRAD 200/GRAD 300 or equivalent courses may cause existing student loans to come due. Please consult with the Office of Financial Aid.

Some programs may require courses other than GRAD 200/GRAD 300 ("equivalent courses") to meet continuous

registration requirements. Please consult individual program pages for additional information.

Failure to Meet Continuous Registration Requirements

A graduate student who fails to meet the continuous registration requirements will be inactivated. Students in good academic standing who were inactivated may petition for readmission to their original degree program by submitting the Application to Request Reinstatement. Programs/Schools make the original admission decision and similarly make readmission decisions.

Reinstatement will occur to current catalog. If reinstated, the student will be required to meet University and degree program admission and degree requirements that are in effect on the date of reinstatement, not the date of original admission.

Reinstatement requests must be accompanied by a plan for completing the degree within the maximum time allowed (see Residence and Time Limits).

A decision to reinstate a former student must be supported by the student's degree program. The continuous registration requirement does not apply to students on approved leaves of absence (see below).

Course Audits

Eligible graduate courses may be audited only by students admitted to a graduate program who have the approval of the student's advisor and of the instructor and dean (or designate) of the academic department where the course is offered. Audits are not available for courses in first-professional programs, unless by written permission of the program's dean. Students auditing a course must pay an audit fee and any special fees associated with the course. Audited courses cannot be retroactively converted to course credit unless officially changed to credit before the "Add Classes" deadline of the semester.

Course Loads

Course load refers to the number of units a student takes during a semester or trimester term. While course-load requirements are program-specific (i.e., programs determine the minimum or maximum number of units students are required to take in a term), course load influences financial aid. The following course load categories correspond to financial aid categories.

Full Time: 8 or more units per semester/trimester
 Half Time: 4 to 7 units per semester/trimester
 Less than Half Time: 1 to 3 units per semester

Students with teaching or other assistantships should check with their department for specific guidelines concerning unit requirements. Conditionally admitted students are not eligible for assistantships.

While the above Course Load categories are applicable to domestic students receiving financial aid, international students studying on an F-1 or J-1 visa must meet registration requirements for a "Full Course of Study," as defined by U.S. Citizenship and Immigration Services, in accordance with the U.S. Department of Education. A "Full Course of Study" is defined on a semester/trimester basis, and students on F-1 or J-1 visas must meet at least one of the established criteria to obtain/maintain their visa:

- 8 units
- 6 units plus 20 hour per week assistantship

- At least 1 unit of Internship, Research, Seminar, Thesis, or Dissertation

For additional information on “Full Course of Study,” please contact the Office of International Programs and Services.

Credit-by-Examination for Graduate Courses

A graduate student in good standing, or a student who has been accepted into one of University of Pacific’s graduate programs, which allows credit by examination, may request to take an exam in order to receive Credit by Examination (CbE) for one or more courses offered by a graduate program. Departments have the right to designate which, if any, of their courses are appropriate for CbE. This policy is subject to the following restrictions.

1. A student may request CbE for a course covering material in which, through independent study, work experience, or work at another institution which was not accepted for transfer credit, the student feels prepared. It is the responsibility of the student to explain how the material was mastered.
2. Students wishing to pursue CbE should not expect preparation support (tutoring, office hours, etc.) beyond a statement of the scope of topic coverage and expectations for passing the exam(s).
3. A student wishing to pursue CbE for a course may not attend the class meetings of the course.
4. A student cannot receive CbE for a course they have previously taken for academic credit.
5. A student may not get CbE for a course in a structured sequence if the student has received credit for a higher level course in the sequence.
6. A maximum of 9 units total may be earned by a student via CbE and/or transfer credit combined.

A student wishing to pursue the credit by examination option must:

1. Complete the appropriate form from the office of the University Registrar;
2. Obtain approval from his or her adviser, and the dean of the school or college offering the course;
3. Pay the scheduled service fee.

Successful completion of the examination will be recorded on the transcript with a grade of Pass and will be made a part of the student’s academic record. This will occur in the semester in which the exam is taken, or in a subsequent semester as directed by the student’s graduate program, especially in the case where a candidate takes the exam before being a full-time graduate student.

Pending credit for having successfully passed the exam, can be used as justification for prerequisite overrides for courses which require the course to which CbE was earned. Appropriate tuition fees will be assessed.

Credit Limitations

Unless included in an approved dual degree or 2+3/3+3 accelerated program, a course can be applied toward only one degree, unless an exception is approved by the Academic Regulations Committee (ARC). Courses not applicable to graduate degrees:

- Lower division undergraduate courses (001-099)
- Courses in which a grade of C- or lower were received. Courses that receive a C- or lower must be repeated
- Courses for the improvement of English language skills of foreign students
- Directed teaching or prerequisite courses for directed teaching except for the Master of Education degree or the Master of Arts in Special Education degree.
- Physical education activity courses.
- Unclassified Status: No more than 12 units, no matter when they are earned, can be transferred from an “Unclassified” transcript into a graduate program.
- Credit used toward a degree earned at another institution cannot be applied to a graduate degree at University of the Pacific.

Double-Listed Courses

In order to differentiate student responsibilities in courses double-listed between undergraduate/masters or masters/doctoral, there must be significant differentiation between the two levels with the more advanced course level evidencing additional rigor as denoted by higher level student learning outcomes and academic rigor with corresponding masters or doctoral level assignments and grading criteria indicated in the syllabus. Masters students enrolled in courses double-listed as both undergraduate and masters level must register using the 200-level course number and complete all requirements in the course for masters level work. Similarly, doctoral students enrolled in courses double-listed as masters and doctoral level must register using the 300-level course number and complete all requirements in the course for doctoral level work.

Grade Point Average

The Pacific grade point average is determined by adding the total quality points and by dividing the resultant sum by the total number of quality hours. As a general rule, the ratio is based on the number of letter graded units completed.

Grading Policies

Students enrolled in the LLM or JSD programs should refer to their program’s Grading Policies.

Symbols and Definitions

Graduate students are assigned grades in keeping with the following provisions. Utilization of (+/-) is at the discretion of individual programs.

Symbo	GPA	Definition
A	4.0	Exemplary
A-	3.7	
B+	3.3	
B	3.0	Satisfactory
B-	2.7	
C+	2.3	
C	2.0	Marginal
C-	1.7	
D+	1.3	
D	1.0	Unsatisfactory
F	0.0	Failing

I Incomplete work due to extenuating and hardship circumstances which prevent the completion of the work assigned within the regular time of the term. Each incomplete grade assigned must be accompanied with a contract statement agreed to by both instructor and student as to: a) what work remains to be completed, b) how it is to be evaluated, and c) a time indicated for completion within six months. If work is not completed within six months, the instructor can indicate a grade in lieu of the F/NC which automatically would be imposed with failure to complete the work. All incompletes must be made up before the last day of the semester in which the student intends to graduate.

Symbo GPA	Definition
N	Deferred grading for thesis, dissertation or research work.
NC	No credit recognition. Represents unsatisfactory work under pass/no credit option.
NG	No Grade Received from the Instructor. Please contact the instructor.
P	Passing work on the pass/no credit system. Approved only for certain courses and program of a college or school. Note: Research for thesis or dissertation the department may determine whether letter grades or pass/no credit grades are to be given. In seminar or comparable courses, letter grades or pass/no credit may be used.
W	Authorized withdrawal from courses after the prescribed period.

Leave of Absence

Students experiencing life changing or catastrophic events are encouraged to request a leave of absence, especially if the Residence and Time Limits policy will be impacted. Consideration for request submitted after the degree time limit has expired will be impacted by evidence of successful continuous progress towards the degree, programmatic changes, and faculty availability. A student who is in good standing may petition for a leave of absence of no more than one academic year and the maximum number of Leave of Absence requests is two. Requests for a leave of absence must be approved in advance by the faculty advisor or Program Director and the Dean of the school. Once the petition is approved, the registration requirement will be set aside during the period of leave. Leaves will be granted only under conditions that require the suspension of all activities associated with pursuing the degree including use of university facilities and faculty mentoring/advice.

Counting of the time to the completion of the degree ceases when a leave of absence is granted and resumes when the student re-enrolls to continue the program. A student who returns to the University after an approved leave of absence will not be required to submit an application for readmission.

Unapproved Leaves of Absence may result in the student being required to re-apply to their program. International students should visit the International Programs and Services to find out how a Leave of Absence may impact their stay or re-entry into the U.S.

Students in the LLM program should consult McGeorge School of Law policies.

Registration

Registration is the means by which an individual officially becomes a student at Pacific. Registrants are further identified by school/college of the University, degree status, classification and major.

All students must register by the last day to add or drop. Students are held accountable to complete every course for which they register. If it is necessary to add or drop a course, the student must complete the appropriate registration transaction by the last day such activity is allowed as published in the University Calendar (<http://www.pacific.edu/About-Pacific/AdministrationOffices/Office-of-the-Registrar/Calendars/Academic-Calendar.html>).

After the add/drop deadline dates has passed (but prior to the end of the term) requests to add or drop courses must be made by special petition to the student's respective school/college.

Requests to drop courses after the term must be made to the Academic Regulations Committee (ARC). In either case, petitions are only approved if it can be shown that the request is warranted due to some special situation or hardship. Courses approved to drop after the deadline appear on the student's transcript with the notation "W" but do not count in the units earned or in the calculation of the grade point average.

Any petitions approved after the deadline dates are subject to a service fee. Tuition and fee refunds are based on the date a withdraw form is initiated in the Office of the Registrar.

Registration - Individualized Study

To register for Individualized Study (Independent Study course, Internships, or Practicum) students must use the Individualized Study Request form. This form is a written contract between students and faculty that specifies the nature of the work to be undertaken and the method of evaluation. The form must have proper approval within the unit and be filed with the Office of the Registrar. An independent study course may not be taken in the same term in which a regular course in the same subject is offered.

Repeating of Courses and Grade Replacement Policy

For courses in which the grade earned is C- or lower, the units are counted for GPA purposes in a student's degree program, and – if required for the degree – must be repeated. Some departments or programs have established higher grading standards which must be met by students in those programs. All grades earned in courses taken as a graduate student at the University are counted in the cumulative GPA.

Only courses with grades of "B-" or lower can be repeated. Once a course is completed with a grade of B or higher, the graduate student cannot repeat that course or any prerequisites for the course. When a course is repeated, grades from both the original and repeated attempt appear in the official records and transcripts. A course can only be repeated once and programs determine the exact number of courses that can be repeated (up to 25% of courses required for a degree). The grade received in the repeated course is used for calculation of the Pacific grade point average.

Requirements for the Master's degree

In addition to the requirements above, the following requirements apply specifically to the Master's degree. Additional degree requirements may

also be in place for individual programs, so students are responsible for also following the policies and requirements of their particular program.

Total Units

Most Master's programs at University of the Pacific require a minimum of 30 units of approved graduate credit.

Degree Candidacy

Successful completion of 12 units with a cumulative GPA of 3.0 or better.

Grade Point Average

Students must maintain a minimum GPA of 3.0 in all work taken as a graduate student, either at the University of the Pacific or any other institution. See the Grading Policy and Academic Standing sections, in addition to program-specific guidelines.

Exit Requirements

Comprehensive Examination/Capstone Experience/Creative Project/Thesis

Most programs have a culminating experience. In addition to successful completion of all courses required for graduation, students may be required to pass a comprehensive examination taken during their final semester of enrollment or, if specified by the program, successfully complete a capstone experience or creative project or defend a thesis.

The thesis must be checked for plagiarism and approved by the thesis committee prior to the defense.

Students must be enrolled the semester in which the defense/final examination occurs.

(See individual program sections for more information).

Requirements for Terminal Degree Programs (Ph.D., Ed.D, and JSD)

The goal of terminal degree programs at the University of the Pacific is to provide students with a comprehensive discipline-specific knowledge base and extensive training in the methods of research/creative activity. The programs are designed to encourage students to make contributions that advance their field of expertise.

Students are expected to demonstrate an ability to conduct independent research, and the ability to express thoughts clearly in both verbal and written and/or creative formats. In order to earn a terminal degree, candidates must successfully complete all degree requirements, demonstrate a high level of professional skill and performance in their academic work and their internship experience (if required), and submit a dissertation, acceptable to the student's committee. Specific program requirements can be found in the appropriate sections of the catalog.

Degree Candidacy

Successful completion of approved candidacy requirements are defined by the degree program (e.g., qualifying scholarly activities or preliminary examinations). With the exception of the JSD, doctoral degree program directors are responsible for written requests of advancement to candidacy when requirements are met, and final approval is the responsibility of the Dean of the school.

Grade Point Average

Students must maintain a minimum GPA of 3.0 in all work taken as a graduate student, either at the University of the Pacific or any other

institution. See the Grading Policy and Academic Standing sections, in addition to program-specific guidelines.

Presentation of an Acceptable Dissertation

In order to be acceptable, the doctoral dissertation must be:

1. a significant contribution to the advancement of knowledge and
2. a work of original and primary research.

Final Oral Examination

When the dissertation is completed, candidates present themselves for the final examination to an examining committee, which consists of the candidate's advisor (who shall act as chair) and such other examiners as the advisor shall approve. The examination is oral and deals intensively with the field of specialization in which the candidate's dissertation falls, though it need not be confined to the subject matter of the dissertation.

In order to be considered satisfactory, the report of the examining committee must be unanimously favorable.

(See individual program sections for more information).

Residence and Time Limits

The period of residence involves students in a total commitment to their graduate program.

Completion of a minimum of one academic year of "residence work" is required for all graduate programs; i.e., the student must be registered for at least 4 units per semester for two semesters. Two summer sessions of at least 4 units each are considered the equivalent of one-half year of residence.

Time Limits for Master's Degrees

The requirements for a Master's degree must be completed within five (5) years subsequent to admission to the program. The five-year period begins the first semester students are enrolled and is calculated from the date of degree conferral. Credit that is more than five years old will not be counted toward a Master's degree. Exceptions, provided the courses were completed at this university, will require strong justification in writing from the student requesting the exception as well as revalidation plan. Written approval from the department, and the Dean of the school/college at which the degree is offered are required. See revalidation process below.

Individual programs may have additional residency and time limit requirements, so students must also consult the particular program's time limits policies.

Time Limits for Terminal Degrees

The requirements for a terminal degree must be completed within ten years subsequent to admission to the terminal degree program. The ten-year period begins with the first semester students are enrolled and is calculated from the date of degree conferral. Students have a maximum of five years to advance to candidacy and a maximum of five years from candidacy to successfully defend the dissertation. Students who exceed the candidacy deadline may request an extension. Candidacy extensions will require strong justification in writing from the student and should be accompanied by a plan of study for timely completion of all requirements for advancing to candidacy. The extension must be approved by the student's advisor, the Program Director, and the Dean of the school.

Courses taken ten or more years prior to the comprehensive examination (terminal degree programs) do not apply towards the graduate degree and must be repeated or revalidated to satisfy the degree requirements.

Individual programs may have additional residency and time limit requirements.

Revalidation Request

If revalidation of expired courses is requested, the faculty advisor or Program Director recommend a revalidation plan. Revalidation will verify that the student's knowledge in a specific subject area is current and documented. Options for course revalidation include a written examination, a scholarly paper, a project, an annotated bibliography, a course retake, or other equally rigorous academic means appropriate to the discipline to determine the student learning outcomes have been met.

Revalidation request should be submitted on the Revalidation Request Form and accompanied by a written justification, revalidation plan, and documentation used for revalidation. All revalidation request and plans must be approved by the student's advisor or Program Director, and the School/College Dean. The student's advisor/Program Director and College Dean are responsible for determining whether the student demonstrated sufficient course knowledge necessary for successful course revalidation. Successfully revalidated courses may be included in the student's plan of study. Failure to follow all designated requirements of the revalidation agreement may result in dismissal from the program.

Graduate students will not be permitted to submit more than 12 units of the program's courses for revalidation. Courses beyond the 12-unit limit will need to be retaken. Only courses completed at University of the Pacific are eligible for revalidation.

Thesis and Dissertations

Many master's degree programs and all doctoral programs require the completion of a thesis (master's degrees) or dissertation (doctoral degrees) as partial fulfillment of an advanced degree. The Center for Teaching and Learning makes available to faculty and graduate degree candidates instructions for the preparation of theses and dissertations. The instructions are to be applied to all theses and dissertations submitted at University of the Pacific. Theses and dissertations must be submitted by the deadline dates published in the Academic Calendar.

Graduate programs have specific courses that must be taken for work on a thesis or dissertation and are graded on a Pass/No Credit basis.

Thesis or Dissertation Committee

This section outlines the general requirements for thesis or dissertation committees. Units and colleges may adopt additional program-specific criteria and guidelines.

Thesis or dissertation chair: Faculty chairing thesis or dissertation committees must be regular, full-time members of University of the Pacific's faculty in the student's graduate program, hold a terminal degree, and have demonstrated expertise to serve as a thesis or dissertation chair. Faculty members without supervisory experience must serve for at least one year as a co-chair with an experienced advisor before they may be recommended to independently supervise thesis or dissertation research. Exceptions to this policy must be approved by the college or school Dean.

Thesis or dissertation committee: The Thesis or Dissertation Committee is composed of a Chair and a minimum of 1 (thesis) or 2 (dissertation) other committee members. The number of committee members depends on the degree objective. All members of the committee must hold degrees at least equivalent to the degree being sought or have demonstrated expertise in the student's field of study. In addition to the committee chair, who must be a University of the Pacific faculty member, the committee member(s) may be selected from within the

student's school or college, from another school or college, or from another institution or organization with recognized expertise in the field or industry.

It is recommended that the committee be formed after a student selects a chair for their research and the faculty member agrees to chair. The student, in consultation with the chair, is responsible for contacting potential members of the committee, inviting members to serve, and seeking approval from advisor, department chair, and college or school Dean.

The responsibilities of the thesis or dissertation committee members are:

1. providing the student with guidance in their thesis or dissertation research,
2. monitoring the student's research progress of their thesis or dissertation research, and
3. approving the content of the final thesis or dissertation.

In order to fulfill the above responsibilities, the committee should hold at least one meeting each semester.

Transfer Credit

Coursework completed at University of the Pacific or at other regionally accredited institutions of higher education since completion of the baccalaureate can be evaluated for transfer credit work with the following restrictions:

- Up to nine (9) semester units can be transferred at the Master's level and up to 12 semester units at the doctoral level.
- Only courses that qualify for graduate or first-professional credit by the transferring institution can be transferred.
- Only courses in which a grade of B or better are eligible for consideration of transfer credit. Some departments set higher standards and there are identified by individual program catalog sections.
- The course work must be less than five years old for Master's degrees and less than 10 years old for Doctoral degrees at the time the University of the Pacific degree is awarded. Credit used toward a degree earned at another institution cannot be transferred to a graduate degree at University of the Pacific.
- Extension courses do not qualify for transfer credit with the exception of university-approved transfer agreements.

Grade points earned in those courses are not counted in the student's Pacific grade point average. This process is initiated using the Degree Requirement Adjustment Form and must be approved by the Director of the Graduate Program and the Office of the Registrar.

Some programs may have more restrictive transfer credit policies.

Unclassified Graduate Students

Students may take graduate level courses as an unclassified graduate student if they meet the following:

- Have a bachelor's degree or the equivalent from a regionally accredited institution or other international institution of acceptable standing
- Apply using the First Time Unclassified Application and submit it to the Office of the Registrar

A maximum of 12 units (16 units for student teachers) taken as an unclassified graduate student will count toward a graduate-level program at University of the Pacific. Upon acceptance to the university,

resident and transfer coursework are evaluated by school/department for applicability to degree. Some programs/courses have restricted enrollment and are not open for enrollment for unclassified students.

Withdrawal from a Term or the University

Students who intend to completely withdraw from a term or from the university have to initiate the process in the Office of the Registrar. The withdrawal date used by Financial Aid for return of Title IV Aid calculation and the effective date used by Student Accounts for tuition refunds are based on the date of your notification to the Office of the Registrar. If a student intends to withdraw from a semester after the last day to withdraw, the withdrawal must be approved by the Academic Regulations Committee. Courses the student was registered for after the last day to drop appear on that student's transcript with the notation "W" but do not count in the units earned or in the calculation of the grade point average. A student who only withdraws from a semester, has one more semester to remain in continuing active status. A student who has completely withdrawn from the University, must file a Petition for Reinstatement Form (with a \$50 fee) available on the Graduate Admission web site. The deadline is August 1st for fall admission or December 1st for spring admission.

An official withdrawal from the University is the termination of rights and privileges offered to currently enrolled students, which include, but are not limited to, early registration.

Campus and Community

University of the Pacific is a multi-campus university with a presence in three very different, but uniquely California cities. Each campus enjoys a unique and vibrant campus culture with deep ties to its surrounding community.

Built in 1924, Pacific's Stockton Campus is renowned for its idyllic beauty, breadth of outstanding academic programs and vibrant and supportive campus life. It is home to the College of the Pacific, the university's liberal arts and sciences school, the Conservatory of Music, the Benerd College, Thomas J. Long School of Pharmacy, the School of Engineering and Computer Science, the Eberhardt School of Business, and the School of International Studies.

Pacific's high-tech San Francisco campus, which opened in 2014, is located in the South of Market district in one of the world's most exciting cities. It is home to Arthur A. Dugoni School of Dentistry, one of the premier dental schools in the nation, as well as graduate programs in data science, audiology and music therapy. Located in one of the nation's most influential capital cities, the Sacramento campus is home to McGeorge School of Law, as well as graduate programs in education, health care, data science, policy and analytics, and a bachelor's degree completion program for working professionals.

The Don and Karen DeRosa University Center is the hub of Stockton Campus student life, offering multiple dining options, including a food court, a coffee house and a pub, event and meeting facilities, the student book store and a large open lawn area. The adjacent McCaffrey Center completes the student life neighborhood, housing a grocery store and student government, Career Resource Center, SUCCESS, the Community Involvement Program, Housing and Greek Life, and Educational Resource Center offices.

The university libraries are a rich resource for study and research. The William Knox Holt Memorial Library is the university's main library, with numerous study areas, meeting rooms, a cafe and an information commons. It houses the bulk of the university collections and digital

resources, as well as the music library and the Holt-Atherton Special Collections. Among Pacific's special collections are bulk of the papers of naturalist John Muir; the Stuart Library of Western Americana; and the University Archives. The Rite Aid Information Commons health sciences library in the Thomas J. Long School of Pharmacy provides additional resources for students in the health sciences, and the Legal Studies Center housed on the Sacramento Campus contains the law library.

Stockton is a dynamic, multi-ethnic and multi-cultural city. Located in the San Joaquin Delta in the heart of the Central Valley, it occupies a key location one of the nation's most fertile agricultural regions. Its inland, deep-water seaport serves as the agricultural, industrial and transportation hub of the valley. The Delta waterways, the American River and more offer a variety of opportunities for fishing and water sports. Stockton's active cultural offerings include performances of the Stockton Symphony, the Stockton Chorale, the Civic Theater and Stockton Opera Association, as well as museums, art galleries and cultural festivals. Sports enthusiasts enjoy Stockton Ports baseball games at Banner Island Ball Park and Stockton Heat ice hockey games at the Stockton Arena. In the surrounding areas, the Mother Lode country in the Sierra Nevada Mountains, Lake Tahoe, Squaw Valley and Yosemite National Park are all within a few hours' drive.

One of the most vibrant and diverse cities of the West Coast, San Francisco is a thriving center for the arts and culture, as well as a hub for innovation and entrepreneurship. Its natural beauty, cosmopolitan environment, world-class museums, diverse population and quaint neighborhoods draw millions of visitors each year. One of the nation's most influential capital cities, Sacramento is a dynamic center for California law and policy, rich with history and culture. The university's three cities, at the heart of the Northern California Megaregion, are all within a two-hour drive from each other.

Campus Security

The University is serviced by the Department of Public Safety. The campus police are dedicated to the goal of maintaining the excellent academic environment that the University provides. The department provides many services, which are designed to make the time spent on campus a pleasant and rewarding experience. Students are encouraged to avail themselves of these services. University of Public Safety programs include: date rape prevention, self protection, crime prevention, emergency phones, Ride Along Program, and special event planning. The office also oversees the S.T.R.I.P.E program which is a safety escort service managed by students. For any further information or questions that you may have, phone Public Safety at (209) 946-2537 or visit our web site link under Student Life at www.pacific.edu (<http://www.pacific.edu>).

Campus Safety and Security Report

University of the Pacific publishes an Annual Safety and Security Report for the Stockton campus that includes statistics concerning reported crimes that occurred on and around the Stockton campus for the previous three years. The Report specifically identifies statistics for crimes that occurred on campus, in certain off-campus buildings owned or controlled by the University and on public property within, or immediately adjacent to and accessible from the campus.

The Report also includes institutional policies and procedures related to campus safety and security. The Report provides information on the University of the Pacific's policies concerning alcohol and drug use, sexual assault and fire safety, including fire statistics. Additionally, the Report outlines University procedures for reporting crimes, providing emergency response, emergency evacuations and emergency notifications.

The report is available on-line at:

<http://web.pacific.edu/Documents/student-life/publicsafety/public-safety-brochure.pdf>.

You may also contact the Department of Public Safety to obtain a hard copy of the report

Information on registered sex offenders is available on-line at <http://www.meganslaw.ca.gov>. or from the Stockton Police Department located at 22 E. Market Street.

Services for Students with Disabilities

www.pacific.edu/disabilities

Phone: (209) 946-2879

Location: McCaffrey Center, Room 137

Office of Services for Students with Disabilities in the Division of Student Life

The University does not discriminate against students and applicants on the basis of disability, in the administration of its educational and other programs. The University reasonably accommodates qualified students (including applicants) with disabilities as defined by applicable law, if the individual is otherwise qualified to meet the fundamental requirements and aspects of the program of the University, without undue hardship to the University. Harassment on the basis of disability issues is prohibited by the University's policies.

For purposes of reasonable accommodation, a student or applicant with a disability is a person who: (a) has a learning, physical or psychological impairment which limits one or more major life activities (such as walking, seeing, speaking, learning, or working); or (b) has a record with the University by which the University has officially recognized such impairment. To be eligible to continue at the University, the student or applicant must meet the qualifications and requirements expected generally of its students, and must also be able to perform the requirements of the individual major or program in which s/he is enrolled.

A qualified student or applicant is an individual with a disability as defined by this policy and applicable law who meets the academic and technical standards requisite to admission and participation in the educational program or activity. Accommodations are such modifications to the course, program or educational requirements as are necessary and effective for the individual, if reasonable to provide at the University and do not alter the fundamental nature of programs. Accommodations do not include exemption from academic evaluation standards or from the code of student conduct.

Pacific expects that, if a student has a disability, the student gives sufficient notice of the need for assistance (preferably prior to the start of the semester) although the University does fully consider the merits of each request at the time it is received. Upon receiving a request for assistance as well as appropriate documentation, the Director of the Office of Services for Disabilities considers the student's need for assistance as it relates to the documented disability. If appropriate, the University may choose to consult with such individuals, internal or external to the University, to provide further assistance needed to evaluate the request for accommodation. The following list is an example of the types of reasonable accommodations and services that the university may provide, on a case-by-case basis, to assure equal access:

- Academic adjustments and curricular modifications
- Assistive technology
- Consultation with faculty and staff
- Registration assistance and classroom rescheduling
- Readers, scribes, note-taking, and library assistance
- Test proctoring services

Please note the university does not provide or subsidize personal care devices or services such as ambulatory devices or assistance with bathing, dressing, laundry, etc. Referrals to external agencies, however, are available upon request.

For additional information, please contact:

Daniel Nuss, Director

Office of Services for Students with Disabilities

McCaffrey Center, Room 137

Phone: (209) 946-2879

E-mail: dnuss@pacific.edu

More detailed information as well as our Policy Manual for Students with Disabilities is available on the web at: <https://www.pacific.edu/student-life/student-services/services-for-students-with-disabilities> (<https://www.pacific.edu/student-life/student-services/services-for-students-with-disabilities/>)

Student Housing

The University provides student housing in residence halls, apartments, and Greek houses on our Stockton campus. Detailed descriptions of these facilities, including cost are available from Residential Life & Housing at (209) 946-2331 or iamhome@pacific.edu. Housing is guaranteed for first-year and second-year undergraduate students only. Upper-division and Graduate students are considered on space availability.

The University maintains apartment complexes on our Stockton campus. Our apartments are separated into units that house either second-year students or junior, senior, and graduate students. All students who live on campus are required to participate in the University's meal plan.

The **University Townhouse Apartments** have one-and two-bedroom apartments for students. **Monagan Hall** and **Chan Family Hall** are located on Brookside Road, between the Thomas J. Long School of Pharmacy and Health Sciences and the Cowell Health Center building. Each suite features four bedrooms, two full baths, living room, and dining/kitchen area. Priority assignment for Chan Family Hall are given to graduate/professional level students in the Pharmacy and Health Sciences.

Eligibility: Graduate students desiring University housing must be registered students to be eligible. Student Housing Agreements for apartments are for the academic year. Housing for upper-division (Junior, Senior, Graduate, Professional) students is not guaranteed.

The Residential Life & Housing office also has a list of off-campus housing and apartment listings in the surrounding Stockton community.

Housing in Sacramento or San Francisco

Additional information regarding housing for students based on the Sacramento Campus may be found here: http://www.mcgeorge.edu/Future_Students/Life_at_McGeorge/On-Campus_Housing.htm

Additional information regarding housing for students based on the San Francisco Campus may be found here: <http://www.dental.pacific.edu/>

academic-programs/housing (<http://www.dental.pacific.edu/academic-programs/housing/>)

Health Services

<http://www.pacific.edu/healthservices>

Phone: 209-946-2315

Location: Cowell Wellness Center

Student Health Services (SHS) and Counseling and Psychological Services (CAPS) are both located in the Cowell Wellness Center building. They are each departments within the Division of Student Life. The Cowell Wellness Center building is located across the foot bridge, north of the main campus, at the corner of Brookside Road and Manchester.

SHS puts patients at the center of their health care. SHS provides comprehensive health care that include health and wellness education, medical, nutrition, laboratory, pharmacy, insurance, and immunization services. Our integrative health care staff includes physicians, nationally certified nurse practitioners, phlebotomists, nationally certified medical assistants, an insurance coordinator, immunization coordinator, and a registered dietitian. SHS provides programs, services, and resources that are designed to enable students to obtain their optimal health and achieve their academic goals.

CAPS staff is comprised of stated licensed psychologists and marriage and family therapists, doctoral psychology interns and part-time consulting psychiatrists. Therapists specialize in working with the student population and are trained to assist students in reducing stress, building self-confidence, relating to others, solving problems/finding options, and managing ongoing psychological conditions. Therapy sessions are available to students who have paid the Cowell Wellness Fee, as well as non-student partners attending couples counseling for a per-session fee. CAPS provides individual, group and couples therapy.

Therapists specialize in working with the student population and are trained to assist students in building self-confidence, being assertive, relating to others, reducing stress, solving problems, finding options, and managing on-going psychological conditions. Personal counseling, both one-to-one and group, is available.

Due to the Privacy Act, staff does not routinely discuss student's care with anyone, including parents, unless the student has provided a written consent to release information. With consent, however, professional staff is available to address questions and concerns about students' health issues and treatment plans.

The staff members of both SHS and CAPS are active within the Student Life Division at Pacific and actively contribute to the goal of helping our students achieve academic and career achievement by attending to the health and wellness required to be successful in the global world.

2019-2020 Eligibility and Costs

- Undergraduate and Graduate Students enrolled in 9 units or more will be charged the Cowell Wellness fee of \$165/per term and students enrolled in under 9 units will be charged a part-time Cowell Wellness fee of \$90/per term.
- Dugoni Dental Students enrolled in 16 units or more will be charged the Cowell Wellness fee of \$82.50/per quarter term and students enrolled in under 16 units will be charged a part-time Cowell Wellness fee of \$45/per quarter term.
- McGeorge Law Students enrolled in 6 units or more will be charged the Cowell Wellness fee of \$165/per term and students enrolled in under 6 units will be charged the part-time Cowell Wellness fee of \$90/per term.

SHS are available to all students who have registered for classes at all three University campuses.

Cowell Wellness Center Fee includes:

- Medical visits
- Counseling and Psychological Services
- Dietitian services
- Health and wellness programs, services, and resources

Cowell Wellness Center fee does not cover the cost of some procedures, medications, and outside referrals. Students are required to have health insurance. The University offers a comprehensive student health insurance plan.

The Undergraduate, Graduate, Professional and Law Student health insurance coverage period:

Fall: 08/01/2019 - 1/31/2020

Spring/Summer: 2/1/2019 - 7/31/2020

Dental Students:

Summer/Fall: 07/01/2019-12/31/2019

Spring/Summer: 01/01/2020 - 06/30/2020

Students can access information about the student health insurance plan @ <http://www.pacific.edu/insuranceoffice> or call 833.233.0764

CAPS are available to students who have:

1. Registered for classes at the Stockton campus or Pacific McGeorge School of Law on the Sacramento campus.
2. Paid the Cowell Wellness Center Fee
3. Non-student partners of a Pacific student for couples counseling for a per-session fee.

Please note that CAPS does not bill your health insurance for services. All on-campus therapy is included in the Cowell Wellness Center Fee.

Please note: Students are automatically charged for the University contracted insurance policy with Anthem Blue Cross unless they have completed an annual health insurance waiver. The link to the waiver is available through the Health Services website at <http://www.pacific.edu/insurancewaiver>

Graduate Assistantships

Introduction

University of the Pacific recognizes that providing graduate students with teaching and research assistantships is critical to the success of graduate and undergraduate programs at Pacific. This policy outlines the types of graduate assistantships, the requirements for students becoming graduate assistants, students' responsibilities, their compensation, and the evaluation of their work.

General

Graduate assistantships are intended to assist students financially during their period of study. They should not interfere with a student's timely and successful progression toward graduation. Assistantships must support the educational experience of the student and be related to the student's graduate program. Graduate assistant appointments (singularly or in any combination with other on-campus employment) are for a maximum of 20 hours per week

to prevent overload working conditions, which may threaten the student's academic progress and the quality of assigned duties.

Administrative responsibility for graduate assistantships rests within the unit in which the student is employed, in consultation with all other relevant units.

Graduate teaching assistants must reapply for appointment each year, and the assistantship is contingent upon satisfactory progress toward the degree.

Types of Graduate Assistantships

There are two types of graduate assistantships: Teaching Assistantships and Research Assistantships.

Teaching Assistantships

Graduate Teaching Assistants (GTAs) are funded through the respective School or College. GTAs are considered hourly employees, expected to work as teaching assistants, and are generally awarded tuition waivers. GTAs are typically responsible for directing lab sections, leading discussion sections, holding office hours, preparing course materials, grading, and in some cases, teaching regular classes of courses numbered below 200 under the tutelage and supervision of regular faculty members who are responsible for curriculum and instruction in the University. GTAs may not teach courses numbered 200 or above.

However, GTAs may assist with laboratories or discussion sections for 200- and 300-level courses, but may not teach or assist with a course in which they are enrolled.

Research Assistantships

Graduate Research Assistants (GRAs) are responsible for working on research projects in collaboration with or under the direction of a faculty or staff member. Duties assigned to Research Assistants may include gathering, organizing, and analyzing data, grading papers, and assisting faculty or non-academic units on campus. Whatever their responsibilities, duties assigned to GRAs must be relevant to the graduate program and the professional goals of the student. The supervising faculty or staff member determines the students' particular responsibilities and is accountable for monitoring and evaluating their performance. Many GRAs are funded through extramural grants and contracts; therefore, the research is often closely tied to the objectives of the grant proposal.

Qualifications

All graduate assistants must hold a bachelor's degree or the equivalent and be admitted as students for graduate study. Applicants must have a cumulative GPA of 3.0 or better in all post-secondary coursework or in the last 60 units of baccalaureate and/or post-baccalaureate work and meet minimum enrollment requirements outlined below. GTAs must maintain good academic standing with a cumulative grade point average (GPA) of 3.0 or higher in all courses listed on the approved Program of Study. Conditionally admitted students are not eligible for assistantships. Each employing departmental unit or university office will review the qualifications of all appointees at the time of appointment to ensure compliance with existing university policies.

Duties

A fundamental responsibility of all graduate assistants is to work closely with their supervisors in carrying out assigned duties and at the same time making satisfactory progress towards the completion of their degree programs. Duties may include a range of assignments; the exact duties will depend on the needs of the department, the background and qualifications of the graduate assistant, and the professional goals of the student. Work assignments should consider both the needs of the department and the graduate student's obligation to make satisfactory progress in his or her chosen academic program.

Appointment

Offers of assistantships are contingent upon available funds and admission of the applicant to a graduate program and are made by the head of the unit that will employ the graduate assistant. Graduate assistantship appointments may be made for one or two academic terms, a summer term, or one academic year. The term of an appointment for a graduate assistant may be based on the period of available funding as stated in their initial appointment letter.

Graduate assistants may not work more than an average of 20 hours per week for the university (0.5 FTE). This includes all university appointments and on-campus work positions. The exact days and hours may vary and should be decided upon in coordination with the graduate assistant's supervisor prior to the start of the term.

International Teaching Assistants

University of the Pacific requires international graduate students whose native language is not English to obtain English proficiency certification before serving as graduate teaching assistants. English proficiency certification can be achieved by submitting official test scores on university-approved English proficiency examinations (see admission section of graduate catalog for minimum scores). This requirement does not apply to a student who has earned a baccalaureate or higher degree from an accredited institution of higher education in the United States, or from an institution in another English-only speaking country.

Compensation and Benefits

Salary ranges for GTAs are set by the respective School or College. Individual colleges or employing non-academic units may set the exact hourly rate for each assistantship based on the type of degree program and level of academic progression (e.g., pre- vs. post-candidacy for doctoral students), the assigned duties, and other relevant factors.

Graduate assistantships, like other student employee appointments, are considered to be "at will", temporary appointments and do not qualify for vacation, holiday, or seasonal pay. Social Security and Workers' Compensation insurance benefits, however, are provided to all student employees.

Rights and Responsibilities

A graduate assistant is a student employee performing part-time work related to academic training in an occupational category that requires all incumbents to be students as a condition of employment. Accordingly, the first priority of a graduate assistant should be satisfactory progress in his/her academic program. At the same time, graduate assistants have responsibilities for satisfactory performance of employment duties.

Graduate assistants are responsible for becoming familiar with general academic procedures in the University Catalog, the Faculty Handbook, Tiger Lore, and other university policies. These documents are available on the university's website.

Graduate assistants have a right to exhaust all proper channels in resolving a grievance regarding any aspect of their employment. For graduate assistants, the channels, in order, are: the immediate supervisor, department chair or program director, the College/School Dean, the Graduate Dean, and the Provost/Vice President for Academic Affairs.

Enrollment

Any student serving as a graduate assistant must be enrolled for at least three units, but not more than 12 units of graduate coursework during the term in which the work is performed. Note: graduate assistants enrolled in fewer than 4 units (part-time) may be subject to additional payroll taxes. Please contact Payroll for more information. Students

serving as a GA during summer I, II, or III must be enrolled in at least one unit of graduate coursework during the term in which they hold a GA appointment. Individual programs/ departments/colleges may have additional credit hour requirements.

Advanced students, who have completed the formal coursework required for their degree and are enrolled in internship, research, seminar, thesis or dissertation courses only, may enroll in fewer than three units of graduate coursework. Individual programs/ departments/colleges may have additional enrollment requirements.

Orientation and Training

All new GTAs and GRAs will complete University of the Pacific's mandatory online training including Title IX, FERPA, IT Security, and sexual harassment training, any required safety training, and undergo a period of orientation prior to beginning work. This orientation will be conducted by the employing department and include an overview of procedures, facilities, duties and university policies. GTAs must also participate in instructor training.

Evaluation and Continuation of Employment

Each department is responsible for determining procedures for review and evaluation of graduate assistants and for informing graduate assistants of these procedures. The process of evaluation will vary by department and type of assistantship, and may include written assessment of work by an individual faculty member or supervisor, classroom visitation by designated faculty members, and student evaluations. The results of reviews and evaluations should be discussed with the graduate assistant.

In cases where remedial measures are indicated to improve the graduate assistant's performance, the graduate assistant must be informed of the performance deficiencies and the required changes to resolve the problem. Situations leading to recommendation of dismissal for cause should be described in writing to the graduate assistant, with a copy sent to the college/school dean or appropriate administrator.

Decisions regarding the reappointment of graduate assistants will be based on the needs of the institution and the past performance of the graduate assistant. To be reappointed, graduate assistants must have demonstrated satisfactory progress in their academic programs and satisfactory performance of their employment duties at the university.

Graduate assistant appointments are "at-will," which means that the university or the graduate assistant may terminate the employment at any time. A graduate assistant's continued employment will be in jeopardy for reasons including, but not limited to, failure to meet requirements, loss of funding, unacceptable performance/conduct, or academic delinquency. All involuntary dismissals must be reviewed by Human Resources prior to implementing a dismissal.

Arthur A. Dugoni School of Dentistry

<http://www.dental.pacific.edu>

Phone: (415) 929-6400

Dean: Nader A. Nadershahi, DDS, MBA, EdD

The Arthur A. Dugoni School of Dentistry is a fully-accredited professional school that offers the Doctor of Dental Surgery degree. The 36-month program prepares graduates to provide quality dental care and to supplement and adapt their knowledge and skills throughout their professional lives. The school prides itself on producing competent beginning general dentists in a humanistic environment who have a reputation for high standards of clinical excellence and are active and successful members of the profession. The school's vision is to lead the

improvement of health and wellness through innovation in programs, partnerships, and people, and is supported in this endeavor by its commitments to courage, empowerment, excellence, innovation, integrity, and leadership.

The dental program, located on the downtown San Francisco campus, includes biomedical and behavioral science, laboratory, preclinical, and clinical instruction as well as research and community service opportunities. The school also has a teaching clinic in Union City and several affiliations with extramural clinics throughout the San Francisco Bay Area.

In addition to the Doctor of Dental Surgery degree, the School of Dentistry has postdoctoral residency programs in orthodontics and endodontology that lead to a certificate and the degree of Master of Science in Dentistry; an International Dental Studies program which grants a DDS degree after two years of training to individuals who have graduated from a foreign dental school; a baccalaureate program in dental hygiene offered in conjunction with the College of the Pacific; and a postdoctoral residency program in Advanced Education in General Dentistry (AEGD) in Union City that leads to a certificate.

The School of Dentistry is a member of the American Dental Education Association (ADEA) and its educational programs are fully accredited by the Commission on Dental Accreditation.

Benerd College

www.pacific.edu/education

Phone: 209-946-2683

Location: Gladys L. Benerd Building

Patricia J. Campbell, Ph.D., Dean

Programs Offered

Master of Arts (MA) in Education with concentrations in:

- Counseling Psychology
- Innovative Education in Health Professions
- Special Education (credential option)
- Teaching (credential option)

Master of Arts (MA) in Leadership with concentrations in:

- Organizational Innovation and Change
- Leading for Social Impact

Educational Specialist (EdS)

- in School Psychology (and a Pupil Personnel Services Credential in School Psychology)

Doctor of Education (EdD) in Education with concentrations in:

- Counseling Psychology
- Leadership and Innovation
- Transformative Action in Education

Stackable Certificates

- Certificate in Leadership for Health Education
- Certificate in Leading and Facilitating Innovation
- Certificate in Learning, Innovation, and Design
- Certificate in Teaching, Innovation, and Design
- Certificate in Leading for Social Impact

- Certificate in Strategic Consulting
- Teacher Leadership Certificate

Credentials Offered

Preliminary Multiple Subject Credential

Preliminary Single Subject Credential in the following areas:

- Art, English, Mathematics, Science, Social Science, Spanish, and Music.

Preliminary Special Education Credential in the following areas:

- Educational Specialist (mild/moderate)
- Educational Specialist (moderate/severe)

Services credentials in the following categories:

- Pupil Personnel Services Credential in School Psychology
- Speech-Language Pathology Services Credential (For more information contact Speech Language Pathology Department)

Mission

The mission of Benerd College is to prepare thoughtful, reflective, creative, caring and collaborative professionals for service to diverse populations through personalized and transformational learning experiences.

Admissions Requirements

General Admissions Requirements (for non certificates)

1. A cumulative GPA of 3.0 or better for the last 60 units of college or post-baccalaureate work.
2. An appropriate degree from an accredited university (bachelor's for admission to master's programs; master's for admission to educational specialist (EdS) and/or doctoral programs).
3. A completed application portfolio to the Graduate Office (gradinfo@pacific.edu), an essay following departmental guidelines; official transcripts from all college-level coursework including official verification of the awarding of degrees; and three letters of recommendation attesting to the candidate's ability to undertake post-baccalaureate studies.
4. Some programs may require the Graduate Records Examination (GRE), or may have other requirements. Please see specific degree and program requirements for information.
5. Doctoral programs require an admissions interview. Please see specific programs for information.
6. Review by the appropriate department.
7. Evidence of qualities and character in keeping with the philosophy and standards of this University and Benerd College.
8. Please see specific Certificate programs for information about requirements.

Basic Education Policies

Master of Arts Degree

Graduate students who wish to secure a Master of Arts degree with a major in Education or Leadership must meet the requirements specified for all Master of Arts degrees. Students should consult with the assigned program advisor within the first semester of enrollment to develop a plan of study. Benerd College offers two Master of Arts degree (MA in

Education and MA in Leadership) with different concentrations (please refer to the MA program information page).

Educational Specialist in School Psychology Degree

The EdS in School Psychology prepares professionals for systems interventions as school psychologists, and provides advanced training in applied development with diverse populations and consultation methods. For specific information about the EdS in School Psychology, please refer to the EdS program information page.

Doctor of Education Degree

The EdD degree is designed to ensure that each graduate possesses a deep understanding of foundational issues; key theories related to the student's academic focus; historic and emerging research related to student's academic focus; critical issues of research, policy, and practice; moral dimensions of research, policy, and practice; leadership challenges and opportunities; and methods and limitations of research. The degree is also designed to ensure that the candidate can identify key issues and problems and engage in focused and systematic research into problems and related questions. Further, the degree is designed to ensure that graduates possess leadership competencies including verbal and written communication skills; professional maturity; personal discipline; and social and emotional intelligence competencies.

Graduate students who wish to secure a Doctor of Education (EdD) degree with a major in Education must meet the requirements specified for all Doctor of Education degrees. Students should consult with the assigned program advisor within the first semester of enrollment to develop a plan of study. Benerd College offers the EdD degree with three possible concentrations: Counseling Psychology, Leadership and Innovation, and Transformative Action in Education. Candidates who seek EdD degrees must also complete a doctoral dissertation and register for a minimum of 2 units in EDUC 399 and continue to enroll in one unit of EDUC 399 each semester until the dissertation is complete. Please refer to the EdD program information page for more information about courses.

Education Courses

EDUC 100. Introduction to Language. 4 Units.

This course is an introduction to the central role of language in cultures and societies. Emphasis is on social and regional language variation, language and prejudice, gender and social class differences in conversation styles, the history and evolution of languages, and societal attitudes toward language and socio-political-economic influences on language use. Students gain more precision in their academic language development as they explore English grammatical structures and develop an appreciation of the work sociolinguists do through conversational analysis. As part of the University of the Pacific's general education program (1-A), this is a library intensive course. This means that students do library research, using online and other sources to meet some of the course requirements. **(GE1A)**

EDUC 121X. Learner-Centered Concerns. 3 Units.

This course is a general overview of stages in human development from birth to young adulthood. Topics include prominent learning and motivation theories, learner-centered principles of teaching and assessment, the characteristics of learners with exceptional needs, and individual differences among learners including English language learners. Students who are interested in Multiple Subject, Single Subject and/or Educational Specialist credentials take this course. Twenty hours of fieldwork in K-12 public schools is required. Open to all students.

EDUC 129. Seminar: Cultural Basis of Conflict in Education. 3 Units.

Analysis of cultural diversity in American classrooms. Not open to doctoral students. (ETHC)

EDUC 130. Technology Enhanced Learning Environments. 2 Units.

This course focuses on basic skills and software for creating multimedia projects, completing assignments in all education courses, and meeting the state's technology standards for teachers. All assignments in this course relate to building the structure and first section of a candidate's teacher education electronic portfolio. Thereafter, candidates add sections to the portfolio during other courses and activities in their programs of study, which includes evidence that they have met the state's technology standards. Upon graduation, the portfolios are archived in the BSE, and candidates can create a DVD of their entire portfolio or of parts they wish to use. This course is a prerequisite to Admission to Teacher Education.

EDUC 131. First and Second Language Acquisition/Linguistic Foundations. 4 Units.

This course is an introduction to first and second language development, using a compare and contrast framework. It covers theoretical perspectives in first and second language acquisition and explores the relationship between theories and practice in language learning and teaching. This course addresses pedagogical implications of various theories of second language acquisition and discusses socio-cultural factors that influence second language learning. In addition, there is particular attention given to language structure (phonology, morphology, semantics, and syntax) as it relates to the language development of native speakers of English as well as English language learners. This course includes a fieldwork component for which students work with young elementary students off campus once a week during the semester. Prerequisite: EDUC 100.

EDUC 140. Transformational Teaching and Learning. 4 Units.

This is an introductory course that explores the complex relationships within and among local, state, and national levels of public instruction. The course introduces historical, legal, and social issues that affect diverse educational settings. Topics include key movements and legal cases of prominence in American education; demographic information about learners and schools in California; home, family and school partnerships; and professional stages in teaching careers (e.g., subject matter preparation, teacher education, initial licensure, induction programs, and professional development). The course also includes an introduction to "reflective practice"; an overview of stages in human development; prominent learning and motivation theories; the characteristics of learners with exceptional needs; and individual differences among learners, which include English language learners. This course is taken by students interested in Multiple Subject, Single Subject and/or Educational Specialist credentials. It is a prerequisite to Admission to Teacher Education, but it is open to all students at the University. Fieldwork requires fingerprint review and clearance at local districts and TB clearance. There are fees for these services.

EDUC 141. Transformational Teaching and Learning Practicum. 2 Units.

This supervised practicum is taken concurrently with EDUC 140: Transformational Teaching and Learning. Students examine the community, school, and classroom contexts and how they influence the teaching and learning process. Translation of current learning theories into practice are analyzed and applied. Students interact with K – 12 students and teachers in public school settings.

EDUC 142. Visual Arts in Education. 3 Units.

This course assists students in developing an understanding of the visual arts and how they interface with children's development through age 18. The course acquaints students with Visual Arts curriculum in the K-12 classroom. A philosophical emphasis is placed upon the interface of visual arts with children's development. The course explores such concepts and processes as aesthetic perception, creative expression, visual arts heritage and aesthetic valuing, and media and materials, suitable for children through age 18. Prerequisite: Sophomore standing. (GE2C)

EDUC 145. Elementary Physical Education. 3 Units.

This course is designed to prepare students for employment in an elementary school setting and provide them with the tools necessary to formulate and implement a comprehensive elementary PE experience for all students. Participants learn a wide range of teaching skills that facilitate the ability to create a quality active learning environment in elementary PE. Students explore effective teaching and assessment strategies, classroom management skills, the use of constructive feedback, the negotiation of diverse classrooms and the development of appropriate student learning outcomes. Students also are introduced to the subject matter of elementary PE and will undertake several teaching episodes. This course encourages students to engage in reflexive teaching practices, develop physically educated young people, maximize student involvement and enjoyment in PE and integrate core curriculum subject matter into PE lessons.

EDUC 150. Teaching and Assessment. 4 Units.

This course supports reflective teaching and learner-centered principles and practices in the K-12 schools. The course focuses on state-adopted curriculum standards and frameworks in seven content fields, particularly on the content area of History/Social Science; approaches to classroom management; selection of curriculum materials at the state level; and evaluation. Topics include implementing appropriate teaching strategies for meeting the needs of students with special needs and culturally diverse learners; and using developmentally appropriate diagnostic, formative, and summative assessments to plan instruction. Technology is used to enhance curriculum design and student interaction with content knowledge. This course is taken concurrently with EDUC 153, Teaching STEM, for Multiple Subject candidates. EDUC 150 is taken by Education Specialist candidates. (EDUC 153 is not taken by Special Education candidates, unless they are planning to earn a Multiple Subject Credential.) Prerequisite: EDUC 140. Fingerprint and TB test clearance is required.

EDUC 153. Teaching Science, Technology, Engineering, and Mathematics. 4 Units.

Methods and curriculum presented for teaching science, technology, engineering and mathematics in self-contained classrooms. Topics include state-adopted content standards and curriculum framework; essential mathematics, technology, engineering, life, physical, and earth science themes, concepts, and skills; instructional planning and diverse and appropriate teaching strategies for meeting the needs of diverse learners, including mainstreamed and culturally diverse learners; needs of diverse learners, including mainstreamed and culturally diverse learners; principles and practices of evaluation of students' learning. Fieldwork is required. Prerequisite: EDUC 140.

EDUC 154. Productive Learning Environments for Diverse Secondary Classrooms. 2 Units.

Core course concepts and activities include using culturally responsive techniques that contribute to productive learning environments and equitable student outcomes. Preservice teachers in this course survey current discipline and management models and practice research-based strategies designed to promote positive classroom behavior. Establishing and maintaining relationships with families, students, and colleagues are explored as well as practices that contribute to teacher well-being and self-care. Prerequisites: Instructor approval or Teacher Education Program permission; minimum 2.5 GPA, fingerprint and TB test clearance.

EDUC 155. Teaching in the Content Areas I. 3 Units.

This is the first of a three-part course for Single Subject credential candidates to develop professional, reflective practices and abilities for teaching in single subject classrooms, especially in secondary schools. Candidates learn and apply current learning theories to planning, instruction, and assessment, focusing on the general knowledge, skills, and dispositions associated with managing contemporary, culturally diverse secondary classroom environments. Candidates begin to learn about specific subject matter content and pedagogy and a variety of instructional and assessment strategies to benefit all learners. The needs of all secondary school students, including English Learners, and characteristics of the school environment are emphasized for fostering effective teaching and learning.

EDUC 156. Content and Disciplinary Literacy Development in Secondary Schools. 3 Units.

This course provides an introduction to research-based content literacy instruction. The course focuses on preparing candidates to teach content-based reading and writing skills to a full range of students which includes struggling readers, students with special needs, and English Learners. A variety of content-based literacy strategies (reading, writing, listening, and speaking) is presented to facilitate learning in the content areas. The course meets credential requirements. Prerequisites: EDUC 140, admission to Credential Candidacy, Instructor/Teacher Education Program permission, fingerprint and TB test clearance.

EDUC 157. TESOL Theory and Practice. 4 Units.

This course provides a link between theory and practice in the teaching of ESL. Aspects of language learning is discussed, and concomitant instruction and curriculum is analyzed while developing a working model for the development of curriculum that is appropriate for the teaching situation.

EDUC 160. Productive Learning Environments for Diverse Secondary Classrooms. 2 Units.

Core course concepts and activities include using culturally responsive techniques that contribute to productive learning environments and equitable student outcomes. Preservice teachers in this course survey current discipline and management models and practice research-based strategies designed to promote positive classroom behavior. Establishing and maintaining relationships with families, students, and colleagues are explored as well as practices that contribute to teacher well-being and self-care. Prerequisites: Instructor approval or Teacher Education Program permission; minimum 2.5 GPA, fingerprint and TB test clearance.

EDUC 161. Literacy Development (Multiple Subject). 4 Units.

This course introduces methods and curriculum for teaching reading and language arts with integration of humanities and social science for students from kindergarten to eighth grade classrooms. The course focuses on theory-based effective instruction of reading, writing, listening and speaking across the curriculum. Students learn to analyze and evaluate effective literacy skills and strategies in teaching reading, writing, listening and speaking to K-8 students, and to apply and practice these skills and strategies in various instructional settings in various content areas. Emphasis is placed on the integration of reading and language arts throughout the curriculum. Twenty-four hours of fieldwork is required. This course is taken prior to Directed Teaching (Professional Practice). Prerequisite: admission to Teacher Education program with fingerprint and TB test clearance.

EDUC 162. Literacy Assessment (Multiple Subject). 2 Units.

This course investigates the uses of ongoing instructional diagnostic strategies in reading and language arts that guide teaching and assessment. Topics include early intervention techniques appropriate for a classroom setting and guided practice of these techniques. Fieldwork is required and shared with EDUC 161. This course is taken prior to Directed Teaching and may be taken with EDUC 161 concurrently. Prerequisite: admission to Teacher Education with fingerprint and TB test clearance.

EDUC 163. Teaching English Learners. 4 Units.

This course is designed to equip mainstream classroom teachers with the theory, principles, knowledge, and skills to effectively understand and teach English Language Learners at a variety of levels of English proficiency in K-8 classrooms. Teachers will develop appropriate strategies and approaches for developing language proficiency and link their practice to both the California English Language Development Standards and the new Common Core State Standards. Students observe and implement these strategies during their field experiences in order to see, practice, and reflect on effective ways to meet the needs of English learners. Objectives include appropriate assessment, planning, and implementation of sheltered content instruction. Fieldwork hours (160 series fieldwork) specific to this class are required. A grade of C or higher is required for passing this course. Prerequisites: EDUC 100, 140, and 150, or instructor/Teacher Education Program permission; minimum GPA of 2.5; Fingerprint and TB test clearance. (ETHC)

EDUC 164. Introduction to Bilingual Education. 4 Units.

This course provides an overview of bilingual education and is designed to meet the needs of both undergraduate and graduate students who are interested in understanding the role of bilingual, bicultural education in schools. Students explore the related implications of second language acquisition research, sociopolitical theory, and historical as well as contemporary experiences in the contexts of program design, instructional practice, and school/community relations toward a conceptualization of bilingual education as a source of pedagogical enrichment strategies for all learners in all settings. Prerequisites: EDUC 100 and EDUC 131. (ETHC)

EDUC 165. Teaching in the Content Areas II. 2 Units.

This is the second of a multi-course series for Single Subject credential candidates to develop professional, reflective practices and abilities for teaching in single subject classrooms, especially in secondary schools. The emphasis in this course is on content-specific practices. Candidates join their respective professional organizations and participate in those organizations' professional development experiences. In addition to whole class meetings, candidates meet in content-specific seminars with practitioners in their content areas on a regular basis.

EDUC 166. Teaching English Learners, Single Subject. 3 Units.

This course is designed to equip mainstream classroom teachers with the theory, principles, knowledge, and skills to effectively understand and teach English Language Learners at a variety of levels of English proficiency in K-12 classrooms. Teachers develop appropriate strategies and approaches for developing language proficiency and link their practice to the California English Language Development Standards and the new Common Core State Standards. Students observe and implement these strategies during their field experiences in order to see, practice, and reflect on effective ways to meet the needs of English learners. Objectives include appropriate assessment, planning, and implementation of sheltered content instruction. Fieldwork hours (160 series fieldwork) specific to this class are required. A grade of C or higher is required for passing this course. Prerequisites: EDUC 140 or instructor/Teacher Education Program permission; minimum 2.5 GPA; Fingerprint and TB test clearance. (ETHC)

EDUC 167. Adolescent Development. 3 Units.

This course is designed for secondary preservice teachers to consider the principles of adolescent development in context. Biological, cognitive, psychological, social, and moral development are examined to determine how these developmental pathways affect student achievement, motivation, and well being. The influence of family, peers, school, and the broader community on development are explored as well. Implications of current understandings of adolescent development on teaching, learning, and assessment are emphasized. In addition to class meetings, students participate in a practicum in order to apply learning in school settings.

EDUC 168. Microcomputers in Education. 3 Units.

This course introduces the student to the major concepts and applications related to the use of microcomputers in education. Students learn basic operations, terminology and capabilities of microcomputers within an educational context. Key issues related to the use of instructional technology are discussed. Application and evaluation of software for classroom instruction and management is investigated.

EDUC 169. Microcomputers and Curriculum Design. 3 Units.

Issues related to the educational application of instructional technology and its impact on education is investigated. Students do in-depth analyses of software applications and their validity in relation to learning models and the current curriculum. Students evaluate how new technologies may effect change in curriculum. Various projects that relate to evaluation of software, teaching strategies and research in new technologies are required. Prerequisite: EDUC 168 or permission of instructor.

EDUC 170. Professional Practice. 2-10 Units.

Professional practice is a full-day of Student Teaching in public schools. Candidates for a Single Subject and Multiple Subject Preliminary teaching credential are placed in local public schools for intensive application of their knowledge, skills, and dispositions for professional practice in California schools. Student Teaching is full-day teaching for a semester, and undergraduates are approved for Student Teaching. Prerequisites: EDUC 130, EDUC 140, EDUC 141, EDUC 150, EDUC 151, EDUC 152, EDUC 161, EDUC 162, EDUC 163, EDUC 172 (concurrently); SPED 125X (concurrently) with grades of "C" or higher; a minimum GPA of 2.5.; admission to Teacher Education/Credential Candidacy; a passing score on the CBEST with subject matter completed (CSET examination or approved subject matter/waiver program) and approved; approval of a Certificate of Clearance with TB test clearance and program assessments completed prior to Directed Teaching; Directed Teaching approval process must be completed with clearance by the Director of Field Experiences; The United States Constitution requirement must be completed to apply for a teaching credential. No other coursework is permitted other than SPED 125X and weekend and vacation workshops. A candidate must petition for permission to take an additional course in advance with the Teacher Education Program's Director of Field Experiences.

EDUC 171. Professional Practice Music. 2-10 Units.

This course is a full-day of Student Teaching in public schools. Candidates for a Single Subject Music Preliminary teaching credential are placed in local public schools for intensive application of their knowledge, skills, and dispositions for professional practice in California schools. Student Teaching is full-day teaching for a semester, and undergraduates may be approved for Student Teaching. Prerequisites are EDUC 130, EDUC 140, EDUC 141, EDUC 150, EDUC 151, EDUC 152, EDUC 161, EDUC 162, EDUC 163, EDUC 171 (concurrently); SPED 125X (concurrently) with grades of "C" or higher; a minimum GPA of 2.5; admission to Teacher Education/Credential Candidacy; a passing score on the CBEST with subject matter completed (CSET examination or approved subject matter/waiver program) and approved; approval of a Certificate of Clearance with TB test clearance program assessments completed prior to Directed Teaching; completed Directed Teaching approval process with clearance by the Director of Field Experiences; The United States Constitution requirement must be completed to apply for a teaching credential. No other coursework is permitted other than EDUC 172 and SPED 125X and weekend and vacation workshops. A candidate must petition for permission to take an additional course in advance with the Teacher Education Program's Director of Field Experiences.

EDUC 172. Professional Practice Seminar. 2-10 Units.

Students reflect upon and integrate the Directed Teaching experience in large and small group settings for the SB 2042 Credential. Topics include multicultural education, child abuse, school law, interpreting standardized test scores, professional associations and negotiations, discipline plans, lesson planning and conferencing skills. This course may be taken concurrently with EDUC 170/EDUC 270.

EDUC 175. Teaching in the Content Areas III. 2 Units.

This course is the culminating part of a three-part course for Single Subject credential candidates that develops professional, reflective practices and abilities for teaching in single subject classrooms schools. It is taken concurrently with the professional practice practicum (student teaching). Emphasis in the first two parts of the course is placed on acquiring and practicing general and content-specific knowledge, skills, and ethical values associated with managing contemporary, culturally diverse secondary classroom environments. The course is co-taught by University faculty and K-12 Content Area Specialists. In the third and final portion of the course, candidates integrate and synthesize prior learning and independently teach grades 7 – 12 students in their professional practice placements. University and Grades 7 – 12 Content Area Specialists supervise and support candidates and continue to lead seminar sessions. The capstone assessment that leads to the Level I teaching credential, the Performance Assessment for California Teachers (PACT) Teaching Event (TE) is completed as part of this course.

EDUC 180. Workshop Learning: Issues Group Leadership. 1 Unit.

This course is designed to support the learning and leadership model, Peer-Led Team Learning (PLTL). The course topics include practical information (understanding motivation, managing time, dealing with dominating students, learning styles, group dynamics, study skills, helping students improve critical thinking, develop logical reasoning, and prepare for tests), a foundation in learning theory, and guidance about the specific components of the workshop lessons.

EDUC 181. ECE: Social Justice/Diversity. 3 Units.

This course is conducted as an undergraduate level seminar that is designed to examine key normative issues in the area of social justice, diversity and multiculturalism with an emphasis in early childhood education. The relation of social diversity (race, ethnicity, gender, language, societal attitudes and class) to equality in education and education reform movements is viewed from multiple contexts. Topics explored are diversity, sociopolitical aspects of history and the impact on education, and specifically, early childhood education and multiculturalism. A practicum is required in this course. (DVSYS, ETHC)

EDUC 182. ECE: Curriculum and Inquiry. 3 Units.

This course is an upper division course that examines the theoretical understandings of curriculum and inquiry in the early childhood development classroom. Students refine their knowledge, skills, and dispositions related to early childhood methodology and application to young children in diverse populations.

EDUC 183. ECE: Social Contexts/Cognitive Development. 3 Units.

This course is conducted as an undergraduate level seminar that is designed to clarify the cognitive, philosophical, historical, psychological, cultural, social and ethical foundations of early childhood education. The nature of theory and practice are important to teachers of young children and this course provides a broad synthesis of knowledge of child development principles to better understand how children think, act, and how to be effective with them in the classroom.

EDUC 188. Literacy in Early Childhood Education. 3 Units.

This course will intellectually engage participants in the exploration of integrating theory, research and practice in the dimensions of literacy for young children zero to five years of age. Participants will be expected to advance their own knowledge base as they develop their ability to research, analyze, evaluate and synthesize developmental, sociocultural, linguistic, cognitive and other sign systems associated with literacy events. Prerequisite: Junior standing.

EDUC 189. Practicum. 2-4 Units.**EDUC 191. Independent Study. 1-4 Units.****EDUC 192. Preliminary Fieldwork. 1-3 Units.**

Consent of program lead.

EDUC 192A. Elementary Education Fieldwork. 1-3 Units.

Consent of program lead.

EDUC 192B. Secondary Education Fieldwork. 1-3 Units.

Consent of program lead.

EDUC 192D. Early Childhood Education Fieldwork. 1-3 Units.

Permission of program lead.

EDUC 192E. Reading Fieldwork. 1-3 Units.

Permission of program lead.

EDUC 192F. Bilingual Education Fieldwork. 1-3 Units.

Permission of program lead.

EDUC 192G. Cross-cultural Education Fieldwork. 1-3 Units.

Permission of program lead.

EDUC 195A. Pedagogical Seminar. 3 Units.

Investigation of the role that subject matter knowledge and its representations play in teaching. Emphasis on self-assessment of subject matter knowledge. Focus on moral and ethical dimensions of teaching and learning. Prerequisite: completion of a minimum of 8 units in a concentration for the diversified major or multiple subjects wavier program. Senior status or second semester junior status required. Permission of program lead.

EDUC 197. Research in Education. 1-4 Units.**EDUC 197D. Research in Education. 1-4 Units.****EDUC 201. Techniques of Research. 3 Units.**

Students study the various research methodologies that include qualitative, descriptive, causal-comparative, survey, correlational and experimental. Emphasis is on learning to read and comprehend research published in professional journals. The content includes understanding how basic descriptive and inferential statistics are applied to address quantitative research questions.

EDUC 202. Statistical Thinking and Communication. 3 Units.

The objectives of this course are to review basic descriptive statistics and solidify students' understanding of inferential techniques commonly employed in educational research. Students will learn how to conduct appropriate statistical analyses, interpreting output produced by SPSS statistical software. Students will gain confidence in reading results sections of journal articles and learn to communicate using statistical terminology. Analysis of results sections of journal articles will demonstrate that the student can recognize situations, for which various statistical techniques are applicable, explain the reasoning underlying the choice of those techniques, interpret results, and critically evaluate whether the authors' conclusions logically follow from the data analysis conducted and the statistical information presented. Students are expected to learn the power of statistical analysis.

EDUC 204. Education for a Diverse Democracy. 3 Units.

This course is a multidisciplinary exploration of the intersections of education, diversity, and democracy. It introduces foundational and emerging theories and perspectives to examine the interplay of race, class, gender, ability, national origin, and other forms of difference in shaping educational policy, practice and experience, and considers fundamental questions including, "What is education?" and "What is education for?" (ETHC)

EDUC 205. Urban Issues in Education. 3 Units.

This course is designed to enhance educators' awareness of and applied expertise in effectively addressing the issues facing youth attending public schools in urban settings. The focus is on developing, implementing and evaluating interventions using evidence based practices framework, which impact the achievement gap. The complex and multilayered issues of educational equity across diverse cultures will be analyzed. Participants will examine the varied cultural experiences of students and their communities and how learning and behavior is influenced in the classroom.

EDUC 207. Sociology of Education. 3 Units.

Students study the sociology of education and the classroom.

EDUC 209. Curriculum Theory. 3 Units.

Students examine curriculum from various philosophical and learning theory points of view. Models and rationales of curriculum are explored. Historical perspectives and specialized areas of the curriculum are examined in terms of present and future societal needs, and methods of curriculum dissemination are delineated.

EDUC 209D. Principles of Design in Education. 3 Units.

Explore principles of design, the design thinking process, and how to design new processes within educational settings.

EDUC 209M. Models of Learning. 3 Units.

Explore new models of learning and design plans to implement models in real educational settings.

EDUC 211. Facilitation of Projects and Initiatives. 3 Units.

This course provides knowledge and skills necessary to facilitate projects and initiatives related to learning and change. Emphasis will be on tools, techniques, processes, and steps of managing projects and group facilitation.

EDUC 212. Instructional Strategies and Classroom Process. 3 Units.

Students learn a variety of instructional strategies to achieve course objectives. Course content includes a review of research on effective teaching skills related to motivation, expectations, modeling, questioning, grouping, direct instruction, cooperative learning and classroom management. Students examine contemporary lines of inquiry with regard to classroom processes.

EDUC 214. Supervision of Instruction. 3 Units.

This course offers a review of models of supervision and processes that support effective descriptions of classroom practices, analysis and feedback regarding those data and the provision of instructional support for continuing classroom improvement. A practicum component is included.

EDUC 215. Creativity and Ideation. 3 Units.

This course engages students in processes to foster creativity and develop original ideas. Students develop skills in creativity and ideation processes to develop solutions that will be launched later in the program.

EDUC 216. Nature and Conditions of Learning. 3 Units.

Students study both cognitive and traditional learning theories, their applications to instruction and the development of effective teaching strategies. In addition, information processing models are explored and their implications for instruction are addressed.

EDUC 220. Seminar: Social Class Effects in Education. 3 Units.

This seminar explores the nature of social class and its effects on learning in the classroom.

EDUC 221. Research in Second Language Acquisition. 3 Units.

This course focuses on the linguistic, psychological, social and cultural processes in learning and teaching a second language. It is designed to examine the major theoretical perspectives and research studies in second language acquisition. It involves critical analysis and critique of important literature and research studies in second language acquisition. It covers techniques for conducting classroom-based research in second language learning and teaching. Students in this course learn to develop a research proposal to investigate an area of interest in the field of second language acquisition.

EDUC 225. Psychology of Reading. 3 Units.

Students explore current theory and research findings related to the psychological processes involved in literacy acquisition and development. Emphasis is placed upon a cognitive and psycholinguistic approach to understanding the processes of reading and the implications for instruction.

EDUC 230. Leading in Diverse Contexts. 3 Units.

This course provides knowledge and skills to lead, motivate, and coordinate diverse individuals toward attaining shared goals. The course will include study of leadership in organizational and community-based contexts, with an emphasis on development of personal leadership competencies.

EDUC 237. Organizational Learning. 3 Units.

Utilization of principles and theory understand how organizations learn, how they change their levels of organizational knowledge, and how they foster cultures of growth and renewal. Focus on theory and practice-based processes for creating, retaining, and transferring knowledge within an organization, as well understanding organizations within a systems context.

EDUC 246. Teaching as Reflective Inquiry I. 2 Units.

Teaching as Reflective Inquiry I is the first of a three-part course in which preservice teachers are introduced to the concept of teacher research. First, participants critically analyze readings and teacher-inquiry products of experienced teacher researchers. They then conduct a mini-inquiry into their own practices that emerge as a result of their participation in the summer experience. These activities set the stage for more advanced consideration and application of teacher inquiry methods in parts II and III of the course, that lead to a culminating project during the professional practice practicum.

EDUC 250. Teaching Assessment. 3-4 Units.

This course supports reflective teaching and learner-centered principles and practices in K-12 schools. The course focuses on state-adopted curriculum standards and frameworks in seven content fields, particularly on the content area of History/Social Science; approaches to classroom management; selection of curriculum materials at the state level; and evaluation. Topics include implementing appropriate teaching strategies for meeting the needs of students with special needs and culturally diverse learners; and using developmentally appropriate diagnostic, formative, and summative assessments to plan instruction. Technology is used to enhance curriculum design and student interaction with content knowledge. Prerequisites: EDUC 140; Fingerprint and TB test results.

EDUC 253. Teaching Science, Technology, Engineering and Mathematics (STEM). 4 Units.

Methods and curriculum presented for teaching science, technology, engineering and mathematics in self-contained classrooms. Topics include state-adopted content standards and curriculum frameworks; essential mathematics, technology, engineering, life, physical, and earth science themes, concepts, and skills; instructional planning and diverse and appropriate teaching strategies for meeting the needs of diverse learners, including mainstreamed and culturally diverse learners; principles and practices of evaluation of students' learning. Fieldwork is required.

EDUC 254. Productive Learning Environments for Diverse Adolescents. 3 Units.

Candidates will consider the principles of adolescent development in context. Key concepts will be examined to determine how developmental pathways affect student achievement, motivation, and wellbeing. Adolescent development will also be addressed as a major consideration for effective classroom management with a focus on using culturally responsive techniques that contribute to productive learning environments and equitable student outcomes. Pre-service teachers will survey current discipline and management models and practice research-based strategies designed to promote positive classroom behavior. Establishing and maintaining relationships with families, students, and colleagues are explored as well as practices that contribute to teacher well-being and self-care. Prerequisites: Minimum GPA 2.5, Fingerprint and TB test clearance. Permission of instructor or curriculum and instruction department.

EDUC 255. Teaching in the Content Areas I. 3 Units.

This is the first of a multi-course series for Single Subject credential candidates to develop professional, reflective practices and abilities for teaching in single subject classrooms, especially in secondary schools. Candidates learn and apply current learning theories to planning, instruction, and assessment, focusing on the general knowledge, skills, and dispositions associated with managing contemporary, culturally diverse secondary classroom environments. Candidates will begin to learn about specific subject matter content and pedagogy and a variety of instructional and assessment strategies to benefit all learners. The needs of all secondary school students, including English Learners, and characteristics of the school environment will be emphasized for fostering effective teaching and learning.

EDUC 256. Content and Disciplinary Literacy Development in Secondary Schools. 3 Units.

This course provides an introduction to research-based content literacy instruction. The course focuses on preparing candidates to teach content-based reading and writing skills to a full range of students which includes struggling readers, students with special needs, and English Learners. A variety of content-based literacy strategies (reading, writing, listening, and speaking) is presented to facilitate learning in the content areas. The course meets credential requirements. Prerequisites: EDUC 140, admission to Credential Candidacy, Instructor/Teacher Education Program permission, fingerprint and TB test clearance.

EDUC 257. TESOL Theories and Practices. 4 Units.

This course is designed to provide a link between theory and practice in the teaching of ESL. Aspects of language learning are discussed, and concomitant instruction and curriculum is analyzed while developing a working model for the development of curriculum which is appropriate for the teaching situation.

EDUC 259. Teaching English Learners - Single Subject. 3 Units.

This course is designed to equip mainstream classroom teachers with the theory, principles, knowledge, and skills to effectively understand and teach English Language Learners at a variety of levels of English proficiency in secondary classrooms. Teachers will develop appropriate strategies and approaches for developing language proficiency and link their practice to both the California English Language Development Standards and the new Common Core State Standards. Students observe and implement these strategies during their field experiences in order to see, practice, and reflect on effective ways to meet the needs of English learners. Objectives include appropriate assessment, planning, and implementation of sheltered content instruction. Fieldwork hours specific to this class are required. A grade of C or higher is required for passing this course. Prerequisites: Fingerprint and TB test clearance.

EDUC 260. Productive Learning Environments for Diverse Classrooms. 3 Units.

Core course concepts and activities taught include using culturally responsive techniques that contribute to productive learning environments and equitable student outcomes. K-12 preservice teachers in this course survey current discipline and management models and practice research-based strategies designed to promote positive classroom behavior. Establishing and maintaining relationships with families, students, and colleagues are explored as well as practices that contribute to teacher wellbeing and self-care. Senior standing or permission of instructor.

EDUC 261. Literacy Development. 4 Units.

This course introduces methods and curriculum for teaching reading and language arts with integration of humanities and social science for students from kindergarten to eighth grade classrooms. The course focuses on theory-based effective instruction of reading, writing, listening and speaking across the curriculum. Students learn to analyze and evaluate effective literacy skills and strategies in teaching reading, writing, listening and speaking to K-8 students, and to apply and practice these skills and strategies in various instructional settings in various content areas. Emphasis is placed on the integration of reading and language arts throughout the curriculum. Twenty-four hours of fieldwork is required. This course is taken prior to Directed Teaching (Professional Practice). Prerequisite: admission to Teacher Education program with fingerprint and TB test clearance.

EDUC 262. Advanced Methods in Bilingual Education. 3 Units.

This course provides a critical interpretation of current practice in bilingual education, based on theory and research.

EDUC 263. Teaching English Learners. 4 Units.

This course is designed to equip mainstream classroom teachers with the theory, principles, knowledge, and skills to effectively understand and teach English Language Learners at a variety of levels of English proficiency in K-8 classrooms. Teachers will develop appropriate strategies and approaches for developing language proficiency and link their practice to both the California English Language Development Standards and the new Common Core State Standards. Students observe and implement these strategies during their field experiences in order to see, practice, and reflect on effective ways to meet the needs of English learners. Objectives include appropriate assessment, planning, and implementation of sheltered content instruction. Fieldwork hours (160 series fieldwork) specific to this class are required. A grade of C or higher is required for passing this course. Prerequisites: EDUC 100, 140, and 150, or instructor/Teacher Education Program permission; minimum GPA of 2.5; Fingerprint and TB test clearance.

EDUC 264. Introduction to Bilingual Education. 4 Units.

This course provides an overview of bilingual education and is designed to meet the needs of both undergraduate and graduate students who are interested in understanding the role of bilingual, bicultural education in schools. Students explore the related implications of second language acquisition research, sociopolitical theory, and historical as well as contemporary experiences in the contexts of program design, instructional practice, and school/community relations toward a conceptualization of bilingual education as a source of pedagogical enrichment strategies for all learners in all settings. (ETHC)

EDUC 265. Teaching in the Content Areas II. 2 Units.

This is the second of a multi-course series for Single Subject credential candidates to develop professional, reflective practices and abilities for teaching in single subject classrooms, especially in secondary schools. The emphasis in this course is on content-specific practices. Candidates join their respective professional organizations and participate in those organizations' professional development experiences. In addition to whole class meetings, candidates meet in content-specific seminars with practitioners in their content areas on a regular basis.

EDUC 266. Transformational Teaching & Learning. 3 Units.

This is an introductory course that explores the complex relationships within and among local, state, and national levels of public instruction. The course introduces historical, legal, and social issues that affect diverse educational settings. Topics include key movements and legal cases of prominence in American education; demographic information about learners and schools in California; home, family and school partnerships; and professional stages in teaching careers (e.g., subject matter preparation, teacher education, initial licensure, induction programs, and professional development). The course also includes an introduction to "reflective practice"; an overview of stages in human development; prominent learning and motivation theories; the characteristics of learners with exceptional needs; and individual differences among learners, which include English language learners. Fieldwork is required.

EDUC 267. Understanding Adolescents in School Contexts. 3 Units.

This course is designed for secondary preservice teachers to consider the principles of adolescent development in context. Biological, cognitive, psychological, social, and moral development are examined to determine how these developmental pathways affect student achievement, motivation, and well being. The influence of family, peers, school, and the broader community on development are explored as well. Implications of current understandings of adolescent development on teaching, learning, and assessment is emphasized. In addition to class meetings, students participate in a practicum in order to apply learning in school settings.

EDUC 270. Professional Practice. 1-10 Units.

EDUC 270 offers student teaching for the SB 2042 Multiple Subject credential in public schools, for full-day placement. The placement requires additional assignments and action research for the MEd Degree. Prerequisites are completion of prerequisite coursework with grade "C" or higher, minimum GPA of 3.0, admission to Teacher Education/Credential Candidacy, CBEST passed, subject matter completed and approved, approval of a Certificate of Clearance, TB test clearance, program assessments completed, completion of Directed Teaching approval process and clearance by the Director of Field Experiences. The United States Constitution requirement must be completed to apply for a teaching credential. No other coursework permitted other than EDUC 172 and SPED 125X and weekend and vacation workshops, except that a candidate must petition in advance to the Teacher Education Program's Director of Field Experiences for enrollment in an additional concurrent course. The course is open only to MEd Degree candidates. Corequisites are EDUC 172 and SPED 125X.

EDUC 271. Professional Practice Music. 2-10 Units.

EDUC 271 offers Student Teaching or Internship for the Music Single Subject credential. The Music Education Department Chair approves one or more semesters of Directed Teaching and assigns number of units for each semester. The total over one or more semesters must be ten (10) units. This course is open to Master of Education candidates. Prerequisites: 1) Student Teaching; 2) Internship 1) Completion of all prerequisite coursework with grade of "C" or higher; minimum GPA of 2.5; Admission to Teacher Education/Credential Candidacy; CBEST passed; subject matter completed and approved; approval of a Certificate of Clearance; TB test clearance; program assessments completed; completion of Directed Teaching approval process and clearance by the Director of Field Experiences and Music Education Department Chair. The United States Constitution requirement must be completed to apply for a teaching credential. 2) Completion of all prerequisite coursework from 1) with grade of "C" or higher; minimum GPA of 3.0 in Teacher Education courses is required, and the United States Constitution requirement must be completed prior to enrolling in an internship. A contract from the district and a Memorandum of Understanding between the district and the University of the Pacific are required. Corequisites: CURR 195x and SPED 125X. These corequisites must be taken once, if Directed Teaching is split over two or more semesters.

EDUC 272. Professional Practice Seminar. 2-10 Units.

This course is a reflection upon and integration of the Directed Teaching experience in large and small group settings for the SB 2042 Credential. Topics include multi-cultural education, child abuse, school law, interpreting standardized test scores, professional associates and negotiations, discipline plans, lesson planning and conferencing skills. Prerequisite: EDUC 170 or EDUC 270.

EDUC 274. Action Research. 3 Units.

This course focuses on methods of designing and conducting action research in education. Topics include: characteristics of action research, data collection and analysis, determining trustworthiness, and ethical issues related to action research. Students will engage in action research to learn how to develop actionable knowledge. This course is a component in the set of research courses required for master and doctoral students.

EDUC 275. Teaching in Content Areas III. 3 Units.

This is the culminating part of a multi-course series for Single Subject credential candidates following full-time professional practice (student teaching). The goal of this course is to enhance and extend the general and content-specific knowledge, skills, and dispositions acquired in the previous courses in this series and during professional practice. The use of general and content-specific educational technology is emphasized, allowing candidates to explore a variety of ways to integrate technology into instruction. During the course, candidates examine the National Educational Technology Standards (NETS). Further, issues shaping today's technology uses in education are surveyed and discussed.

EDUC 276. Teaching as Reflective Inquiry III. 3 Units.

Teaching as Reflective Inquiry III is the culminating section of a three-part course in which preservice teachers continue to apply principles of teacher research. This is also the capstone course for the M.Ed. Participants continue to conduct action research, initiated in the prior semester, on their impact on student achievement. At the semester's conclusion, participants submit research reports and make presentations of their findings to panels made up of University and K-12 faculty.

EDUC 277. Diversity and Constituency in Educational Administration. 3 Units.

Students explore the values and concerns of the many diverse communities that constitute a school community and they learn effective ways to involve various communities in the participation of school life are presented.

EDUC 278. Educational Organization and Diverse Constituencies. 3 Units.

Organizational patterns and issues that are related to the administration of educational organizations are presented. Particular emphasis is placed on effectively involving diverse stakeholders into the organizational culture of educational institutions.

EDUC 279. Innovation in Education. 3 Units.

This course explores innovation in the educational and social sectors. Provides knowledge and skills necessary to create change within these sectors.

EDUC 280. Education Law and Legal Processes. 3 Units.

Students examine laws, legal principles, interpretations and practices governing federal, state, county and local school organization and administrations. Course content includes laws relating to youth, contracts, liability and tort, effect of federal and state laws on education.

EDUC 281. Modern Trends in Early Childhood Education. 3 Units.

Students learn current trends in the education of children from birth through third grade.

EDUC 282. Advanced Curriculum and Theory in Early Childhood Education. 3 Units.

Involvement with curriculum design, analysis and evaluation.

EDUC 283. School Finance and Business Administration. 3 Units.

Public schools as economic institutions and the roles of the federal, state and local governmental agencies related to school finance are addresses. Students examine public school revenues and expenditures, budget development and administration, and the operational finance of funds and services.

EDUC 284. Directed Teaching Special Assignment. 2-10 Units.

All day Student Teaching in subject-matter classroom(s) and action research, usually in a secondary school. Open only to Master of Education candidates. Prerequisites: completion of all prerequisite coursework with grade "C" or higher; minimum GPA of 3.0; Admission to Teacher Education/Credential Candidacy; CBEST passed; subject matter completed and approved; approval of a Certificate of Clearance; TB test clearance; program assessments completed; completion of Directed Teaching approval process and clearance by the Director of Field Experiences. The United States Constitution requirement must be completed to apply for a teaching credential. No other coursework permitted other than CURR 195X and SPED 125X and weekend and vacation workshops, except that a candidate must petition in advance to the Teacher Education Program's Director of Field Experiences for an additional concurrent course. Corequisite: CURR 195X, SPED 125X.

EDUC 285. Leadership Fundamentals. 3 Units.

Students learn and apply functions, responsibilities and relationships of being a leader. Student progress through a series of modules aimed at developing leadership competence, self-reflection, and expertise in specific applications of leadership.

EDUC 286. Administration of Human Resources. 3 Units.

This course addresses skills and techniques of employee selection, orientation, administration, supervision and evaluation. Topics include staff development activities, determining personnel need, and employee organizations.

EDUC 287. Social Entrepreneurship. 3 Units.

Engages students in action-oriented research of current social enterprises to examine the concept of social entrepreneurship. Provides students a platform to plan how to create social impact through an actual venture created through the program.

EDUC 288. Literacy in Early Childhood Education. 3 Units.

The purpose of this graduate level course is to intellectually engage participants in the exploration of integrating theory, research and practice in the dimensions of literacy for young children zero to five years of age. Participants will be expected to advance their own knowledge base as they develop their ability to research, analyze, evaluate and synthesize developmental, sociocultural, linguistic, cognitive and other sign systems associated with literacy events. This graduate course may be taken by post-bachelor's degree and graduate degree candidates.

EDUC 289. Practicum. 2-4 Units.

Graduate students may enroll in library research with consent of the program lead.

EDUC 290. Digital and Blended Learning. 3 Units.

In this course students will explore and apply digital and blended learning models to design technology-enhanced learning.

EDUC 291. Graduate Independent Study. 1-4 Units.

Graduate students may enroll in library research with consent of the program lead.

EDUC 292. Advanced Fieldwork. 1-6 Units.

Prerequisite: Consent of the program lead.

EDUC 292A. Elementary Education Fieldwork. 1-6 Units.

EDUC 292B. Secondary Education Fieldwork. 1-6 Units.

EDUC 292C. Student Affairs Field Experience. 1-3 Units.

Student Affairs Field Experience allows students to experience a variety of professional roles under the guidance of mentorship of a qualified Student Affairs or Higher Education Administration practitioner. Field experience serves as a complement to students classroom learning and integrates classroom theories and ideas with practical applications.

EDUC 292D. Early Childhood Education Fieldwork. 1-6 Units.

EDUC 292E. Field Experience in Administration and Supervision. 1-4 Units.

This course offers experience in practical on-the-job administrative and supervisory functions at a school site. One unit over each of three semesters is required. This field experience is open only to administrative credential candidates at the University. Permission of program lead.

EDUC 292F. Reading Fieldwork. 1-6 Units.

EDUC 292H. Special Projects Fieldwork. 1-6 Units.

EDUC 292L. Advanced Fieldwork in Bilingual Education. 1-6 Units.

EDUC 293Z. Special Topics. 1-4 Units.

EDUC 295A. Seminar: Middle School Curriculum. 3 Units.

Students review curricular issues in middle schools in the United States, that include an analysis of curricular concepts and the social, economic and political forces, that may shape forth-coming curricular design. Specific content includes historical and philosophical foundation; curriculum trends, alternative approaches; and curriculum materials analysis.

EDUC 295B. Seminar: Secondary Curriculum. 3 Units.

Students review the curriculum issues in middle and secondary schools in the United States, that include an analysis of curriculum concepts and the social, economic and political forces that may shape forthcoming curricular design. Specific content includes historical and philosophical foundations, curriculum trends, alternative approaches, curriculum materials, analysis and issues that relate to adolescence.

EDUC 295C. Seminar: Educational Planning, Delivery, Assessment. 3 Units.

The role of the administrator as the instructional leader is the focus. Facets of the instructional program include curriculum planning, programmatic issues, delivery systems and assessment and evaluation.

EDUC 295D. Trends in Health Professions Education. 3 Units.

Focused on the changing landscape and shifting paradigm in healthcare and health professions education, and what we can do as educators in response to the opportunities and challenges brought by the new learning needs of students, diverse patient population, evolving technology, and emerging pedagogical models. Key trends and hot topics in curriculum design, instruction, and technology in the health sciences will be examined and discussed.

EDUC 295E. Seminar: Teaching Reading and Writing. 3 Units.

Students examine current theory, research, trends, and issues in the teaching of reading and writing. Students translate theory and research in practice through observation of and participation with children in reading and writing activities. Prerequisites: previous coursework in reading, writing, or language development. Graduate standing.

EDUC 295G. Seminar: Elementary Curriculum. 3 Units.

Students review curricular issues in elementary schools in the United States, that include an analysis of curricular concepts and the social, economic, and political forces, that may shape forthcoming curricular design. Specific content includes historical and philosophical foundation, curriculum trends, alternative approaches, and curriculum materials analysis.

EDUC 295I. Innovative Learning Environments. 3 Units.

Investigate the impact of learning environments and design learning environments for specific contexts.

EDUC 295M. Seminar: Learning Design. 3 Units.

This course provides understanding and application in the design, development, and evaluation of learning experiences in various sectors, with a particular emphasis on creating innovative and immersive learning experiences.

EDUC 295P. Teaching and Assessment in Health Professions Education. 3 Units.

Focused on assisting faculty in the health professions and others who support them to understand and implement effective teaching and assessment strategies. Addresses the knowledge, skills, and dispositions expected from a professional educator within the specific context of health professions.

EDUC 296. Integrative Capstone in Innovative Leadership. 2-4 Units.

This course provides the culminating experience of the program, including leadership-related fieldwork project to apply innovation skills through integration of research, theory, and practice.

EDUC 296T. Integrative Capstone in Innovative Teaching and Learning. 1-4 Units.

Provides the culminating experience of the program, including a teaching and learning-related fieldwork project to apply innovation skills through integration of research, theory, and practice.

EDUC 297. Graduate Research in Education. 1-3 Units.**EDUC 299. Master's Thesis. 1-4 Units.****EDUC 302. Issues in Teacher Education. 3 Units.**

Students review and analyze current curricular topics related to pre-service and in-service teacher preparation.

EDUC 304. Program Evaluation. 3 Units.

Students examine selection design and the use of formal and informal devices for the purpose of making diagnosis of learner strengths and weaknesses, measuring learner progress and making summative evaluations of learner achievement, both on an individual and larger scale basis.

EDUC 306. Curriculum Materials Development. 3 Units.

Students design and develop appropriate curriculum materials for to achieve program and course objectives.

EDUC 308. Issues in Curriculum and Instruction. 3 Units.

Students explore crucial issues and trends in curriculum and instruction, their historical origins, current manifestations and implications for teaching and learning in effective schools.

EDUC 314. Socio-Cultural Perspectives and Inquiry. 3 Units.

This course aims to investigate social and democratic aspects of our communities, particularly education and schooling, in the context of a diverse and multicultural society. It engages doctoral students in exploring, conceptualizing, and critiquing social identities and positionality to examine the interdisciplinary understandings of cultural and social realities.

EDUC 315. Cultural, Social, and Emotional Literacy. 3 Units.

Utilizes a systems theory approach to evaluate theoretical foundations and relevant research on the promotion and evaluation of social emotional learning, culturally sustaining pedagogies and culturally responsive teaching.

EDUC 316. Systems Thinking and Interdisciplinary Curriculum Inquiry. 3 Units.

This course focuses on interdisciplinary ways of conceiving curriculum through the use of a systems theory framework. Emphasis will be placed on understanding interrelationships between subject matter disciplines for the purposes of describing and offering solutions to local/global problems requiring sustainable behaviors.

EDUC 317. Aesthetics, Arts, and Imagination as Curriculum Context. 3 Units.

Explores the arts as both a foundation for a liberal education and a medium for inquiry into education. Emphasis will be placed on understanding the role the arts as practiced by education practitioners and the role of the arts in conducting educational inquiry.

EDUC 318. Research in Classroom Context. 3 Units.

This course focuses on how to develop skills and knowledge related to conducting research in culturally and ethnically diverse classroom settings. Emphasis is placed on the collection and analysis of data, primarily through observations, interviews and curriculum documents. Students design and implement a study in a classroom context and present their work both in oral and written form.

EDUC 319. Teaching as a Subversive Activity. 3 Units.

This course focuses on the role critical theory and critical thinking in schooling and education and the ways in which these processes aim to disrupt traditional, standardized, limiting orientations to teachers' curriculum decision making, and re-envisioning what it means to be well educated.

EDUC 320. Advanced Curriculum Studies. 3 Units.

This course is intended to be a capstone research course in curriculum studies. Emphasis is placed on critical analysis of curriculum issues and subsequent research-based and theoretical perspectives relative to areas of doctoral scholarship.

EDUC 321. Writing for Publication. 3 Units.

Focus on the relationship between formal inquiry and the development of research-based scholarship. Emphasis on manuscript development for the purpose of submitting to an academic journal for publication consideration.

EDUC 322. Qualitative Methods for Action-Oriented Research. 3 Units.

This course focuses on methods of designing and conducting action-oriented qualitative research. Topics include: characteristics of qualitative research, data collection and analysis, determining validity and reliability, and ethical issues related to qualitative research.

EDUC 323. Advanced Qualitative Research. 3 Units.

This course builds upon the Qualitative Research Design (EDUC 322) course. Students engage in research and theory related to specific qualitative research methodologies and methods related to their areas of interest. The course readings and activities are designed to prepare students to develop and implement a high quality qualitative study. Prerequisite: EDUC 322.

EDUC 325. Quantitative Research Design and Methods. 3 Units.

This course exposes students to and develops their ability to conceptualize a broader range of research questions dealing with (a) significance of group differences; (b) degree of relationship among variables; (c) prediction of group membership; and/or (d) structure that quantitative design and analysis strategies might inform than those typically introduced in a first course (e.g., EDUC 201). Topics emphasized in the course relate to (a) the purpose and principles of research design; (b) the use of multivariate approaches and analysis; and (c) the construction and validation of measuring instruments. Students learn both to critically examine published research as well as to design methods for studies proposed to validly address research questions dealing with (a) significance of group differences; (b) degree of relationship among variables; (c) prediction of group membership; and/or (d) structure.

EDUC 326. Applied Multiple Regression. 3 Units.

This course acquaints the student with the use of the general linear model as a data analytic tool. Students learn how to generate the interpret output produced by SPSS statistical software in conducting (a) multiple regression analyses involving both continuous and categorical independent variables; and (b) logistic regression analyses involving categorical dependent variables. Prerequisite: EDUC 202 or equivalent course.

EDUC 327. Structural Equation Modeling. 3 Units.

This course is designed to build upon knowledge and skills in multivariate statistical analysis and introduce students to structural equation modeling. Students will develop conceptual as well as practical understandings of structural equation modeling (SEM), and will learn basic SEM techniques to analyze data. Students will also develop skills in writing results from an SEM analysis. Prerequisites: EDUC 325, EDUC 326.

EDUC 330. Advanced Human Development I. 3 Units.

This course focuses on the developmental period of early childhood development. The course examines theoretical and research-based knowledge of the influences of biological, social, affective, cultural, ethnic, experiential, socio-economic, gender-related, and linguistic factors in children's development.

EDUC 331. Advanced Human Development II. 4 Units.

This course focuses on the developmental period of middle childhood and adolescent development. The course examines theoretical and research-based knowledge of the influences of biological, social, affective, cultural, ethnic, experiential, socio-economic, gender-related, and linguistic factors in children's and adolescent's development.

EDUC 332. Advanced Human Development III. 2 Units.

This course focuses on adult development, aging and long term care. The course examines theoretical and research-based knowledge of the influences of biological, social, cognitive affective, cultural, ethnic, experiential, socio-economic, gender-related, and linguistic factors in adult development, aging and long term care.

EDUC 334. Theories of Multicultural Family Therapy and Collaboration. 3 Units.

This course prepares mental health clinicians to assess functioning in and design and implement interventions for couples and families by studying major theories of couples and family therapy. This course also prepares mental health clinicians to help families collaborate with helping institutions to improve the well-being of children.

EDUC 335. Psychotherapeutic Interventions. 3 Units.

This course provides an overview of counseling and psychotherapeutic theories, principles, and techniques, including the counseling process in a multicultural society, an orientation to wellness and prevention, counseling theories to assist in the selection of appropriate counseling interventions, models of counseling consistent with current professional research and practice, and the development of a personal model of counseling.

EDUC 336. Group Counseling. 3 Units.

This course prepares mental health professionals to use direct methods and techniques of group counseling for children, adolescents, adults, and elder adults.

EDUC 337. Crisis Intervention. 3 Units.

This course reviews counseling theory and basic listening and responding skills and contrast them with crisis counseling practices. It also examines various programmatic approaches to the primary and secondary prevention of educational failure and the promotion of health and mental health. The focus is on the enhancement of individual and family competence following a crisis event. The course explores the underlying knowledge base, models for implementing prevention, specific examples of techniques and programs designed to intervene before, during and after a crisis event. Also covered is policy questions, and evaluation issues. Specific attention is given to concepts of stress, coping, and resiliency. Programs such as suicide prevention, crisis intervention, drug and alcohol education, sexuality education, child abuse prevention, and others are closely examined and criticized.

EDUC 338. Consultation Methods. 3 Units.

This course prepares school psychologists to provide mental health consultation to school personnel and parents. Various consultation methodologies will be studied with applications particularly appropriate to children in the public school system.

EDUC 340. Introduction to School Psychology. 1 Unit.

This course serves as an introduction to the specialization of school psychology. It is intended to give the student an overview of the field of school psychology focusing on the role and function of the school psychologist in the public schools and other settings. Topics include the history of school psychology, Pupil personnel services in schools, service delivery models, school psychology, organizations, research traditions in school psychology, international school psychology, ethical and legal issues, publications and resources in school psychology.

EDUC 341. History and Systems in Psychology. 3 Units.

This course explores major developments and ideas in the history of psychology as an academic discipline. Although our focus is on psychology, this course also introduces students to the history and foundations of the profession of school psychology, including education, special education, health care, and related fields. This course examines the historical progression of ideas central to psychology, the philosophical and empirical roots of those ideas, and the confluence of those ideas into the various systems we have today. This survey course includes such topics as of the history of psychology from the early Greek philosophers, through the beginnings of modern science and philosophy, through the early approaches to psychology, to psychology in its most contemporary form.

EDUC 342. Law and Professional Ethics for Mental Health Professionals. 3 Units.

This course is designed for students in credential and licensing graduate programs in human services and mental health professions. Students will study approaches to ethical decision-making in addition to learning relevant law and regulation and existing ethical codes of behavior.

EDUC 343. Psychopathology and Wellness Promotion. 3 Units.

This course will examine a variety of mental disorders from a variety of perspectives, including the biomedical model of mental disorders and diagnostic categories while emphasizing sociocultural viewpoints and developmental experiences. The predominant treatments, including educational interventions, for the major disorders will also be covered, as well as primary and secondary prevention of mental disorders and the promotion of health and mental health in public schools and the community.

EDUC 344. Behavior Assessment and Intervention. 3 Units.

In this course graduate students will learn how to develop and write a behavior intervention plan. Students will learn about and practice various methods of data collection, including interviews, systematic observations, and review of records, designing behavioral interventions, implementing behavioral interventions, and analyzing behavioral interventions. Particular attention is given to collecting and analyzing behavioral data within a multi-tiered system of supports (MTSS) framework. For students in the School Psychology program, this course is accompanied by one unit of EDUC 396 School Psychology Field Work.

EDUC 345. Academic Assessment and Intervention. 3 Units.

In this course graduate students will collect and analyze academic data and design and implement academic interventions. Students will learn various methods of academic assessment including academic data collection (including curriculum based assessment and other standardized and norm referenced tests), designing academic interventions, implementing academic interventions, analyzing the outcomes of academic interventions, and writing academic support plans. Particular attention is given to collecting and analyzing academic data within a multi-tiered system of support (MTSS) framework. For students in the School Psychology program, this course is accompanied by one unit of EDUC 396 School Psychology Field Work.

EDUC 346. Psychological Assessment. 3 Units.

This course prepares mental health professionals to use psychological testing and assessment information in a problem solving process, and to use data-based decision making to improve outcomes for instruction, development of cognitive and academic skills, and the development of life competencies. Students will also be exposed to process and procedures identified in referral and state laws related to special education services.

EDUC 347. Behavior and Personality Assessment. 3 Units.

This course is designed to help students gain proficiency in the administration, scoring, and interpretation of several instruments commonly used in behavioral and personality assessment. The writing of professional reports, theoretical aspects and measurement of behavior and personality, and legal and ethical issues will be addressed.

EDUC 348. Neuropsychology. 3 Units.

This course provides a general overview of: brain-based behavior; neuroanatomy and physiology; conceptualizing psychoeducational and psychological assessment data from a neuropsychological perspective; the effects and uses of psychotropic agents; and information on neuropathology.

EDUC 349. Psychopharmacology for Mental Health Professionals. 3 Units.

This course surveys the physiological and behavioral effects of the major classes of psychoactive drugs, including therapeutic agents and drugs of abuse, mechanisms of action, side effects, effects on the fetus, and collaborating with other health and mental health professionals and families. The main focus of this course is on psychoactive anxiety disorders, schizophrenia, and substance abuse.

EDUC 350. Social Psychology. 3 Units.

This course is designed to introduce students to current social psychology theory, concepts, and research. A broad range of theoretical topics will be covered, including research methodology, the self, attributions and social perception, social cognition, attitudes, social influence, attraction and interpersonal relationships, pro-social behavior, and aggression. Additionally, issues of diversity, such as prejudice, stereotypes, and group dynamics/relations, will be addressed. The relevance of these social psychology concepts as foundational for the practice of professional psychology will be highlighted.

EDUC 352. Applied Inquiry I. 3 Units.

In this course students work collaboratively in learning communities to identify and explore general and specific educational/social/political issues that affect learners/learning outcomes for key educational constituencies. Each student identifies a preliminary issue/problem/concern for his/her dissertation project and engages in early exploration of foundational issues, key theories, and seminal emerging research on these topics.

EDUC 353. Interdisciplinary Ways of Seeing, Knowing, and Acting. 3 Units.

Engages students in the development of understanding of the multiple foundational influences in which education is viewed today. Addresses historical, philosophical, epistemological scholarship that frames contemporary educational and schooling decision-making processes.

EDUC 354. Applied Inquiry II. 3 Units.

This course provides doctoral students with an overview of assumptions/limitations/strengths and claims of educational research. Further, it provides them with an overview of quantitative and qualitative methodologies (data collection and analysis strategies) and of the relevance of these for specific problems and questions. Prerequisite: EDUC 352. Prerequisite, may be taken concurrently: EDUC 202.

EDUC 356. Applied Inquiry III. 3 Units.

This course places doctoral students into professional learning communities with colleagues and a faculty leader. In these communities, students work collaboratively and independently to ensure that each student develops a refined problem statement and draft literature review. Prerequisites: EDUC 354.

EDUC 358. Applied Inquiry IV. 3 Units.

This course places doctoral students into professional learning communities with colleagues and a faculty leader. In these communities, students work collaboratively and independently to ensure that each student develops a defense ready dissertation proposal. Prerequisite: EDUC 356.

EDUC 359. Dissertation Boot Camp. 3 Units.

This course is ideal for doctoral candidates who have an approved dissertation proposal and seek support in writing their dissertation. This course also benefits doctoral students who are in the process of completing their dissertation proposal. This course facilitates intensive, focused writing time, and provides participants with strategies and structure to overcome common roadblocks in the dissertation process. Prerequisite: Approved dissertation research proposal or instructor approval.

EDUC 360. Trends, Issues, and Dynamics of Change. 3 Units.

In-depth exploration of the intersection of learning, leadership, and change in various sectors. The class integrates research and practice through (1) organization theory and change and (2) an innovation and systems perspective on learning.

EDUC 361. Seminar: Ethics, Law and Finance. 3 Units.

Students examine the relationships between ethics, law, and finance and how they impact decision-making in educational institutions.

EDUC 363. Seminar: Personnel Issues. 3 Units.

This seminar course explores personnel management, resource allocations, employee evaluation, collective bargaining, staffing, staff development, and conflict mediation.

EDUC 364. Policy Analysis, Creation, and Navigation. 3 Units.

Students examine issues and techniques relative to policy formulation and implementation. The political, social and economic forces that impact policy decisions are emphasized. Students think through their own relationships with policy from an organizational perspective.

EDUC 365. Seminar: Administration of Higher Education. 3 Units.

Students study administrative, educational and personnel problems and issues in community colleges and four-year institutions.

EDUC 366. Marketing and Storytelling for Social Impact. 3 Units.

Provides experiences crafting marketing strategies that resonate with stakeholders of ventures designed for social impact. Emphasis is on creation of projects in storytelling, recruiting, social media, and branding.

EDUC 367. Seminar: Leadership in Diverse Organizations. 3 Units.

In this course, students explore techniques for using leadership skills to increase cultural proficiency in diverse educational and organizational contexts.

EDUC 368. Seminar: Leading Complex Organizations. 3 Units.

In this course, students explore techniques for using leadership skills to increase cultural proficiency in diverse educational and organizational contexts.

EDUC 370. Prof. Induction Planning. 2 Units.

Students learn how to develop a collaborative professional induction plan to meet the requirements for the Professional Administrative Services Credential.

EDUC 371. Professional Assessment. 2 Units.

This course provides a formal assessment of candidates for the Professional Administrative Services Credential.

EDUC 372. Program and Organization Evaluation. 3 Units.

The course provides knowledge, skills, and experience in the evaluation process for programs and organizations to facilitate organization effectiveness and development.

EDUC 372M. Measuring Social Impact. 3 Units.

Provides knowledge, skills, and experience to evaluate and iteratively develop social and educational change initiatives.

EDUC 374. Action Research. 3 Units.

This course focuses on methods of designing and conducting action research in education. Topics include: characteristics of action research, data collection and analysis, determining trustworthiness, and ethical issues related to action research. Students will engage in action research to learn how to develop actionable knowledge. This course is a component in the set of research courses required for master and doctoral students.

EDUC 377. Design Thinking & Lean Startup for Social Impact. 3 Units.

This course develops context for design thinking and lean startup models in starting an educational or social enterprise. Students implement ideas into actionable projects and enterprise development.

EDUC 380. Leading Innovation. 3 Units.

This course provides knowledge, practice, and experience in cross-sector innovation tools to impact organizations and institutions through leading the development of new ideas, processes, products, and/or services.

EDUC 381. Law in Higher Education. 3 Units.

This course prepares students to examine the legal dimensions of the collegiate-level decision process. Administrative arrangements, policy issues and case law are analyzed.

EDUC 382. Leadership in Higher Education. 3 Units.

This course prepares doctoral students with the attitudes and skills to analyze leadership theories, challenges and strategies in higher education.

EDUC 384. Spousal and Partner Abuse, Detection, and Intervention. 1 Unit.

This course addresses the causes, assessment, treatment, statistics and legal issues concerning intimate partner violence.

EDUC 385. Alcoholism and Chemical Substance Abuse Dependency. 1 Unit.

This course describes the most commonly abused substances as well as the signs of abuse and addiction and the most effective treatment principles and therapeutic techniques.

EDUC 386. Child Abuse Assessment and Reporting. 1 Unit.

This course provides information on identifying, assessing, and reporting child abuse and neglect, including the laws governing mandated reporting. This course also covers prevention and treatment of child abuse and neglect.

EDUC 387. Human Sexuality. 1 Unit.

This course reviews the basic anatomy, sexual function and response, and challenges and disorders of sexual function. Diagnostic formulations and treatments for the disorders that clinicians are most likely to encounter in clinical practice are also presented. Finally, challenges and complexities of sexuality within special populations are reviewed.

EDUC 388. Counseling Practicum. 1-6 Units.

Counseling Practicum entails the supervised application of psychological procedures in appropriate settings.

EDUC 389. Curriculum Practicum. 2-4 Units.**EDUC 391. Graduate Independent Study. 1-4 Units.****EDUC 391D. Graduate Independent Study. 1-4 Units.****EDUC 391E. Graduate Independent Study. 1-4 Units.****EDUC 391F. Graduate Independent Study. 1-4 Units.****EDUC 392. Internship and Advanced Field Experience in Administration. 1-4 Units.**

Permission of department chair.

EDUC 393C. Special Topics. 1-3 Units.

EDUC 393D. Special Topics. 1-4 Units.

EDUC 393E. Special Topics. 1-4 Units.

EDUC 393F. Special Topics. 1-4 Units.

EDUC 393G. Special Topics. 1-4 Units.

EDUC 393H. Special Topics. 1-4 Units.

EDUC 393I. Special Topics. 1-4 Units.

EDUC 394. Seminar: Doctoral Research in Educational Administration. 3 Units.

The goal of this semester is to have doctoral students develop an acceptable dissertation proposal. Faculty members lead discussions, provide individual assistance, and collaborate on individual student progress with the aim to assist the student in the proposal development process. The seminar is divided into group sessions and individual meetings with student selected dissertation advisors. Prerequisite: Permission of program lead.

EDUC 396. School Psychology Fieldwork. 1-3 Units.

Fieldwork in School Psychology entails the supervised application of school psychological procedures in schools and related settings.

EDUC 397. Graduate Research in Education. 1-4 Units.

EDUC 397A. Graduate Research in Education. 1-4 Units.

EDUC 397B. Graduate Research in Education. 1-4 Units.

EDUC 397C. Graduate Research in Education. 1-3 Units.

EDUC 398. School Psychology Internship. 1-3 Units.

Students perform duties of a school psychologist in multicultural school settings under the direct supervision of a credentialed school psychologist. Placement must be half-or full-time. Prerequisites: Students must have an intern credential and permission of the instructor before beginning an internship.

EDUC 398B. QSA Projects. 1 Unit.

Doctoral students develop and complete each of three proposed QSA projects. Students work with a mentor and two department faculty in conducting research relevant to three proposed projects. Doctoral students must have completed the approval of the Qualifying Scholarly Activity proposal (CURR 397Ap) or may have permission to be concurrently enrolled in CURR 397B. Students may enroll more than one time in CURR 397B until all three QSA projects have been completed and defended.

EDUC 398C. Dissertation Proposal Development. 1 Unit.

This course is open to a doctoral student who has successfully completed all coursework and three Qualifying Scholarly Activities after taking CURR 397A and CURR 397B. The student prepares and defends the dissertation proposal and Institutional Review Board (IRB) proposal. The student concurrently enrolls in a minimum of one unit of CURR 399: Doctoral Dissertation.

EDUC 398D. Qualifying Scholarly Activities. 1 Unit.

EDUC 398 provides doctoral candidacy qualifying requirement to demonstrate competence in research and subject matter. Students (a) identify a research area and level, (b) complete a scholarly annotated bibliography, (c) respond to a question in the form of a scholarly paper, and (d) orally defend the response to the question.

EDUC 399. Doctoral Dissertation. 1-15 Units.

Educational Psychology Courses

EPSY 191. Independent Study. 1-3 Units.

Permission of program lead is required.

EPSY 291. Independent Graduate Study. 1-4 Units.

Prerequisite: Consent of the program lead.

EPSY 318. Program Evaluation for School Psychologists. 3 Units.

This course prepares advanced degree students with the attitudes, ethics and develop skills that will allow them to evaluate a variety of educational programs in different types of settings, as well as develop requests for funding to meet grant specifications. This course is specifically designed for the unique responsibilities of professionals in school psychology.

EPSY 324. Seminar: Advanced Consultation and Supervision. 3 Units.

This course provides doctoral students with advanced training in and exposure to effective models of collaboration and supervision with an emphasis on systems-level change with diverse populations in public schools.

EPSY 391. Graduate Independent Study. 1-3 Units.

Permission of program lead.

EPSY 397A. Graduate Independent Research. 1-4 Units.

EPSY 397B. Graduate Independent Research. 1-4 Units.

EPSY 397C. Graduate Independent Research. 1-4 Units.

EPSY 397D. Graduate Research. 1-4 Units.

EPSY 397E. Graduate Research. 1-4 Units.

EPSY 397F. Graduate Research. 1-4 Units.

Leadership Courses

LEAD 200. Exercising Leadership. 3 Units.

Provides knowledge and skills to lead, motivate, and coordinate diverse individuals toward attaining shared goals. Includes study of leadership in organizational and community-based contexts, with an emphasis on development of personal leadership competencies.

LEAD 201. The Ethical Leader. 3 Units.

Enables students to understand ethics, leadership, and leadership ethics and how they relate to our personal and professional lives. This course attempts to raise awareness surrounding these legal, moral and ethical challenges, create a sensitivity to the implications of leadership decisions so you can make the most effective decision possible, equip you with tools and strategies for managing your own and others' ethical behavior, and encourage you to critically evaluate the decisions of others.

LEAD 202. Leadership Fundamentals. 3 Units.

Learn and apply functions, responsibilities and relationships of being a leader. Student progress through a series of modules aimed at developing leadership competence, self-reflection, and expertise in specific applications of leadership.

LEAD 210. Leadership and Inquiry. 3 Units.

Engages students in cycles of inquiry to gain deeper understanding of the issues that impact their organization and how that informs their leadership identity. Through these inquiry cycles, students reflect on how actions and decisions influence an organization and its people. Students use these reflective practices to build self-awareness about their on-going leadership growth and development.

LEAD 215. Evaluation for Organizational Effectiveness. 3 Units.

Provides knowledge, skills, and experience to facilitate collaborative, data-informed evaluation. Focused on increasing the effectiveness of programs, groups, and organizations.

LEAD 220. Creativity and Ideation. 3 Units.

Engages students in creativity and ideation. Students develop creativity skills and ideation processes to create ideas that will be launched later in the program.

LEAD 221. Facilitation of Projects and Initiatives. 3 Units.

Provides knowledge and skills related to group facilitation with focus on facilitating projects and initiatives of all types. Emphasis will be on facilitative leadership, tools, techniques, processes, and knowledge for helping teams succeed.

LEAD 229. Human Resource Functions. 3 Units.

Addresses the administration of strategic human resources (HR) with a focus on talent management and development. Topics include competencies for human resources, tactical and strategic approaches to human resources, organizational roles, motivation theory and practice, integrated talent management, generations in the workplace, the coach approach to performance management, and succession management.

LEAD 251. Learning Design. 3 Units.

This course provides understanding and application in the design, development, and evaluation of learning experiences in various sectors, with a particular emphasis on creating innovative and immersive learning experiences.

LEAD 252. Coaching for Organizational Contexts. 2 Units.

Development of skills and knowledge to partner with others in their professional development, with the aim of helping people reach their goals and enhance performance through exploration of ideas and dialogue. Focus on theory, research and applied techniques to facilitate an evidence-based coaching process.

LEAD 255. Design Thinking. 3 Units.

Provides knowledge, skills, and application to facilitate human-centered inquiry and design processes for organizational problem solving.

LEAD 256. Change in Complex Systems. 3 Units.

Immerses students in innovation and change methodologies while working with clients in transforming teams, groups, and organizations.

LEAD 258. Organizational Consulting. 3 Units.

Provides knowledge and skills necessary to facilitate and support the implementation of change in teams, groups, and organizations. Emphasis on both theoretical and practical aspects of consulting skills, particularly the consultant-client helping relationship.

LEAD 259. Organizational Learning. 3 Units.

Utilization of principles and theory to understand how organizations learn, how they change their levels of organizational knowledge, and how they foster cultures of growth and renewal. Focus on theory and practice-based processes for creating, retaining, and transferring knowledge within an organization, as well understanding organizations within a systems context.

LEAD 260. How to Change the World. 3 Units.

Examines ideas and concepts around society, socialization and what it means to be social change agents. Focuses on the development, continuity and changes in social institutions, culture and society and their impact on how we fit into society, how we view ourselves as individuals and how we create change.

LEAD 261. Design Thinking for Social Impact. 3 Units.

Design thinking is an iterative problem-solving process of discovery, ideation, and prototyping. The process can be used to address all kinds of creative challenges. This course will focus on equipping students with design thinking skills, as they apply to leadership and social impact issues.

LEAD 262. Understanding Social Impact & Change. 3 Units.

Provides a foundation of the concepts, themes, vocabulary, and theories related to social impact and social change. Gives students opportunities to explore various community and professional practices to expand awareness of social impact issues and the role of power, privilege, and identity in their understanding.

LEAD 263. Global Social Change. 3 Units.

Explores issues related to globalization, the changing relationships related to culture and societies, and the impact on us individuals. Examines power, privilege, activism, resistance, and global social justice movements to deepen our understanding of social relations at local, national, and international levels.

LEAD 265. Reflective Practice for Leadership & Social Impact. 3 Units.

Engages students in reflective practice to understand the impact their identity has on their leadership skills. Students will develop critical perspectives related to leadership and social impact.

LEAD 295. Special Topics in Leadership. 1-4 Units.

n/a.

LEAD 296L. Integrative Capstone in Innovative Leadership. 2-4 Units.

Provides the culminating experience of the program, including leadership-related fieldwork project to apply innovation skills through integration of research, theory, and practice.

LEAD 296S. Integrative Capstone for Social Impact. 2-4 Units.

Provides the culminating experience of the program, including a leadership-related fieldwork project to apply skills and demonstrate an understanding of social impact through the integration of research, theory, and practice.

LEAD 297. Graduate Research in Leadership. 2-4 Units.

n/a.

Special Education Courses

SPED 124. Assessment of Special Education Students. 3 Units.

The role of assessment in teaching students with disabilities will be explored. In addition, teacher made testx, curriculum based assessment, portfolio assessment, and commonly used standardized tests will be examined. This course will comply with the California Commission on Teacher Credentialing (CCTC) requirements for The Preliminary Level One Credential for Education Specialist: Mild/Moderate/Severe Disabilities. Prerequisites: SPED 123 and SPED 166. Admission to Teacher Education/ Credential Candidacy or permission of Special Education Coordinator or Department Chair of Curriculum and Instruction.

SPED 125X. Teaching Exceptional Learners. 2 Units.

This course provides an introduction to and description of the characteristics and needs of children and youth with identified disabilities. This course explores the etiology, treatment, educational strategies, social and vocational opportunities for individuals with disabilities with mild/moderate and extensive support needs. Particular emphasis is paid to federal and state legal requirements for educating individuals with disabilities and teaching students with disabilities in inclusion and least restrictive education settings. This course satisfies the requirements for clearing a preliminary multiple and single subject credential as specified by the California Commission on Teacher Credentialing (CTCC). Prerequisites: admission to Teacher Education (Credential Candidacy).

SPED 128. Advanced Programming for students with Mild/Moderate and Moderate/Severe Disabilities. 3 Units.

Theoretical and applied information pertaining to the characteristics and educational needs of students with mild to moderate disabilities will be presented. This course will comply with the California Commission on Teacher Credentialing (CCTC) requirements for the Preliminary Level One Credential for Educational Specialist: Mild/Moderate and Moderate/Severe Disabilities. Prerequisites: SPED 123, SPED 166, and Credential Candidacy in the Education Specialist Program, or permission from Instructor. Course topics will be explored through discussion, lecture, film/video, group activities, guest presentations, and simulations. Students are encouraged to think critically throughout the course and to challenge the ideas and concepts presented. Students are encouraged to explore their personal educational philosophy and skill levels through the integration and synthesis of course reading assignments, first hand experience, and other related information.

SPED 128M. Advanced Programming for Students with Disabilities. 3 Units.

Theoretical and applied information that pertains to the characteristics and educational needs of students with disabilities. The course complies with the California Commission on Teacher Credentialing (CCTC) requirements for the Preliminary Level One Credential for Educational Specialist: Mild/Moderate Disabilities. Prerequisites: SPED 123 and SPED 166 with admission to Teacher Education/Credential Candidacy or permission of Special Education Coordinator or Department Chair of Curriculum and Instruction.

SPED 131. Evidence Based Practices in Autism Spectrum Disorder. 3 Units.

Focused study on the autistic spectrum disorder through examination of research studies and applied information on effective program development. Students will demonstrate knowledge of the characteristics and educational needs of children and adults who are diagnosed on the autism spectrum. Further, students will demonstrate knowledge of evidenced based behavioral, educational and social strategies, and family impact and dynamics. Students will also demonstrate the ability to synthesize information and communicate effectively with parents, teachers, administrators, and care-givers. The course is designed for new or current professionals in education, school psychology, administration, and related helping professions. This course is a required course for all candidates for the Education Specialist credential in mild/moderate and moderate/severe disabilities.

SPED 132. Juvenile Bipolar Disorder. 3 Units.

The course will examine the diagnostic process, including the challenges of juvenile on-set bipolar disorder where presentation of the disorder is frequently confused with other conditions. Cutting edge treatment/management approaches will be examined in an integrated manner, including family dynamics, medication, and psycho-social methods. A particular emphasis will be placed on psycho-educational assessment, the role of each member of the educational team, melding appropriate educational and behavioral program development, and tools for working successfully with school programs.

SPED 142M. Curriculum and Instruction for Students with Mild/Moderate Disabilities. 3 Units.

This course presents theoretical and applied information that pertains to methods of curriculum and instruction for students with mild to moderate disabilities. This course complies with the California Commission on Teacher Credentialing (CCTC) requirements for The Preliminary Level One Credential for Educational Specialist: Mild/Moderate Disabilities. Prerequisites: SPED 123 and SPED 166 with admission to Teacher Education/Credential Candidacy or permission of Special Education Coordinator or Department Chair of Curriculum and Instruction.

SPED 142S. Curriculum and Instruction for Students with Moderate/Severe Disabilities. 3 Units.

This course presents theoretical and applied information that pertains to methods of curriculum and instruction for students with moderate to severe disabilities. This course complies with the California Commission on Teacher Credentialing (CCTC) requirements for the Preliminary Level One Credential for Educational Specialist: Moderate/Severe Disabilities. Prerequisites: SPED 123 and SPED 166 with admission to Teacher Education/Credential Candidacy or permission of Special Education Coordinator or Department Chair of Curriculum and Instruction.

SPED 166. Building Family-Professional Partnerships. 3 Units.

This course provides practical strategies for professional educators to effectively communicate and collaborate with families in order to enhance the capacity of families to support an advocate for children with special needs in the home, school, and community. The emotional and social needs of children with disabilities and their families, education laws and policies regarding parental/family rights, historical and current trends in family advocacy, and professional ethics are also be examined. Ten hours of field experience is required as part of the course content.

SPED 191. Independent Study. 1-4 Units.

Permission of program lead is required.

SPED 195E. Positive Behavioral Support in the Classroom. 3 Units.

Theoretical and applied information that pertains to methods of providing positive behavioral support to students with and without disabilities in educational settings are examined. This course complies with the requirements for the California Commission on Teacher Credentialing (CCTC) Preliminary Level One Credential for Educational Specialist: Mild/Moderate/Severe Disabilities. Prerequisites: SPED 123 and SPED 166 with admission to Teacher Education/Credential Candidacy or permission of Special Education Coordinator or Department Chair of Curriculum and Instruction.

SPED 198M. Directed Teaching: Mild/Moderate. 1-10 Units.

This student teaching experience provides an opportunity for candidates in the mild/moderate credential program to apply theoretical knowledge and acquired skills to the classroom in a student teaching experience. Prerequisite: the completion of all prerequisite and required courses needed to enroll in Directed Teaching and permission of the Director of Special Education or designate.

SPED 198S. Directed Teaching: Moderate/Severe. 1-10 Units.

This student teaching experience provides an opportunity for candidates in the moderate/severe credential program to apply theoretical knowledge and acquired skills to the classroom in a student teaching experience. Prerequisites are the completion of all prerequisite and required courses needed to enroll in Directed Teaching and permission of the Director of Special Education or designate.

SPED 224. Assessment of Special Education Students. 3 Units.

The role of assessment in teaching students with disabilities is explored. In addition, teacher made tests, curriculum based assessment, portfolio assessment and commonly used standardized tests are examined. This course complies with the California Commission on Teacher Credentialing (CCTC) requirements for the Preliminary Level One Credential for Educational Specialist: Mild/Moderate or Moderate/Severe Disabilities. Prerequisites: SPED 123, SPED 166 and admission to Teacher Education/Credential Candidacy or permission of SPED Program Lead.

SPED 225X. Teaching Exceptional Learners. 2 Units.

This methods-based course is for candidates who will be teaching students with disabilities in the general education classroom. It is designed to provide professional educators with theoretical knowledge and practical strategies to effectively serve children with diverse abilities and needs in mainstream/integrated/inclusive general education programs. The course content reviews special education legislation, litigation, and instructional trends and issues related to educating children with special needs in the least restrictive environment. The course also addresses the needs of students from culturally and/or linguistically diverse backgrounds that are identified with a disability or with gifted and talented needs. Course topics will be explored through discussion, lecture, film/video, group activities, guest presentations, and simulations. Students are encouraged to think critically throughout the course and to challenge the ideas and concepts presented. Students are encouraged to explore their personal educational philosophy and skill levels through the integration and synthesis of course reading assignments, firsthand experience, and other related information. Fieldwork is required. Prerequisites: Admission to Teacher Education, fingerprint, TB test.

SPED 228. Advanced Programming for Students with Disabilities. 3 Units.

Theoretical and applied information pertaining to the characteristics and educational needs of students with mild to moderate disabilities will be presented. This course will comply with the California Commission on Teacher Credentialing (CCTC) requirements for the Preliminary Level One Credential for Educational Specialist: Mild/Moderate and Moderate/Severe Disabilities. Course topics will be explored through discussion, lecture, film/video, group activities, guest presentations, and simulations. Students are encouraged to think critically throughout the course and to challenge the ideas and concepts presented. Students are encouraged to explore their personal educational philosophy and skill levels through the integration and synthesis of course reading assignments, first hand experience, and other related information. Prerequisite: SPED 123, SPED 166 and admission to Teacher Education/Credential Candidacy or permission of SPED Program Lead.

SPED 231. Evidence Based Practices in Autism Spectrum Disorder. 3 Units.

Focused study on the autistic spectrum disorder through examination of research studies and applied information on effective program development. Students demonstrate knowledge of the characteristics and educational needs of children and adults who are diagnosed on the autism spectrum. Further, students demonstrate knowledge of evidenced based methodology as an overlay to examining assessment diagnosis, causes/risk factors, therapeutic behavioral, educational and social strategies, and family impact and dynamics. Students also demonstrate the ability to synthesize information and communicate effectively with parents, teachers, administrators, and care-givers. The course is designed for new or current professionals in education, school psychology, administration, and related helping professions. This course is a required course for all candidates for the Education Specialist credential in mild/moderate and moderate/severe disabilities.

SPED 232. Juvenile Bipolar Disorder. 3 Units.

The course examines the diagnostic process, including the challenges of juvenile on-set bipolar disorder where presentation of the disorder is frequently confused with other conditions. Cutting edge treatment/management approaches are examined in an integrated manner, including family dynamics, medication, and psycho-social methods. A particular emphasis is placed on psycho-educational assessment, the role of each member of the educational team, melding appropriate educational and behavioral program development, and tools for working successfully with school programs.

SPED 242. Curriculum and Instruction for Students with Mild/Moderate and Mod/Severe Disabilities. 3 Units.

This course presents theoretical and applied information that pertain to methods of curriculum and instruction for students with mild to moderate to severe disabilities. This course complies with the California Commission on Teacher Credentialing (CCTC) requirements for the Preliminary Credentialing (CCTC) requirements for the Preliminary Level One Credential for Educational Specialist: Mild/Moderate or Moderate/Severe Disabilities. Prerequisite: Admission to Teacher Education program or permission of SPED Program Lead.

SPED 242M. Curriculum and Instruction for Students with Mild/Moderate Disabilities. 3 Units.

Theoretical and applied information that pertain to methods of curriculum and instruction for students with mild to moderate disabilities are presented. This course complies with the California Commission on Teacher Credentialing (CCTC) requirements for the Preliminary Level One Credential for Educational Specialist: Mild/Moderate or Moderate/Severe Disabilities. Prerequisites: SPED 123, SPED 166 and admission to Teacher Education/Credential Candidacy or permission of SPED Program Lead.

SPED 250. Introduction to Induction Plan. 2 Units.

The purpose of this practicum-based course is two fold: to introduce the student to the induction plan process, and provide an opportunity for candidates enrolled in the Mild/Moderate or Moderate/Severe Level II Educational Specialist Credential Program to identify their particular professional needs as well as to set goals and objectives for their continued teacher development and to apply theoretical understandings to the classroom. The course complies with the California Commission on Teacher Credentialing (CCTC) requirements for the Level II Professional Development Educational Specialist Mild/Moderate and Moderate/Severe Clear Credential. Prerequisite: Completion of the Preliminary Level I Educational Specialist Credential Program in Mild/Moderate and/or Moderate/Severe.

SPED 252. Portfolio Assessment. 2 Units.

This is the last class in the 16-unit course sequence for the Level II phase of the Educational Specialist credential program. The course provides an opportunity for candidates enrolled in the Mild/Moderate or Moderate/Severe Credential Program to apply theoretical understandings to the classroom and demonstrate professional competencies, through a series of evaluation processes. Students enrolled in this course are expected to log 40 contact hours in the field. Students must have two years of teaching experience as an Educational Specialist. This course complies with the California Commission on Teacher Credentialing (CCTC) requirements for the Level II Professional Development Educational Specialist Mild/Moderate or Moderate/Severe Disabilities Clear Credential. The Special Education coordinator or department chair must be consulted prior to enrollment to update progress on the Professional Induction Plan. Prerequisites: SPED 250; SPED 295A or SPED 385a; and completion of electives in the Professional Development Plan.

SPED 266. Building Family & Professional Partnerships. 3 Units.

The purpose of this course is to provide professional educators with theoretical knowledge and practical strategies to effectively enhance the ability of families to support children with disabilities and other special needs in the home, school and community. This includes children with a variety of exceptional needs (i.e. learning, orthopedic, health, hearing and visual), those from varying socioeconomic status, religious backgrounds, gender identity and sexual orientation. The course is designed to increase understanding of atypical and typical childhood development and the emotional and social needs of children with disabilities and their families, within the context of the expanding demographics in the state and local community as a multi-ethnic and culturally diverse population. The course will explore skills and techniques for professionals to effectively communicate, advocate, and collaborate with families and to promote family involvement and support in the education of their children with special needs. Education laws and policies with regard to parental/family rights and professional ethics will be reviewed. This course will also examine historical and current trends in family involvement, advocacy and support practices, policies and programs. In short, this course is designed to help you foster professional-family relationships that are meaningful, cooperative, and productive. Course topics will be explored through discussion, lecture, case study analyses, film/video, and group activities. Students are encouraged to think critically throughout the course and to challenge ideas and concepts presented. Students also are invited to expand their personal educational philosophy and skill levels through the integration and synthesis of course readings, assignments, first-hand experience and other related information.

SPED 291. Independent Graduate Study. 1-3 Units.**SPED 293. Special Project. 1-3 Units.**

Prerequisite: Consent of the program lead.

SPED 295A. Seminar: Crucial Issues in Special Education. 3 Units.

This course provides a methodology and format for advanced special education students and other related disciplines to explore crucial issues and trends and their historical origin. Course content includes attention to research and the development of positions on trends, issues and current law.

SPED 295E. Positive Behavioral Support in the Classroom. 3 Units.

Theoretical and applied information that pertain to methods of providing positive behavioral support to students with and without disabilities in educational settings is examined. This course complies with the California Commission on Teacher Credentialing (CCTC) requirements for the Preliminary Level One Credential for Educational Specialist: Mild/Moderate or Moderate/Severe Disabilities. Prerequisites: SPED 123, SPED 166 and admission to Teacher Education/Credential Candidacy or permission of SPED Program Lead.

SPED 297. Graduate Research. 1-3 Units.**SPED 298M. Directed Teaching: Special Education (Mild/Moderate). 1-10 Units.**

This student teaching experience provides an opportunity for candidates in the mild/moderate credential program to apply theoretical knowledge and acquired skills to the classroom in a student teaching experience. All prerequisite and required courses must be completed to enroll in Directed Teaching. Permission of SPED Program Lead.

SPED 298S. Directed Teaching: Special Education (Moderate/Severe). 1-10 Units.

This student teaching experience provides an opportunity for candidates in the moderate/severe credential program to apply theoretical knowledge and acquired skills to the classroom in a student teaching experience. All prerequisite and required courses must be completed to enroll in Directed Teaching. Permission of SPED Program Lead.

SPED 299. Master's Thesis. 4 Units.**SPED 391. Independent Graduate Study- Special Education. 1-3 Units.****SPED 391D. Indep. Grad. Study/Spec. Educ.. 1-4 Units.****SPED 395A. Seminar: Crucial Issues in Special Education. 3 Units.**

This semester provides a methodology and format for advanced special education students and other related disciplines to explore crucial issues and trends and their historical origin. Attention to research and the development of positions on trends, issues and current law is included.

SPED 397. Graduate Research. 1-3 Units.**SPED 397A. Graduate Research. 1-3 Units.****SPED 397B. Graduate Research. 1-3 Units.****SPED 397C. Graduate Research. 1-3 Units.**

Master of Arts

www.pacific.edu/Academics/Schools-and-colleges/Gladys-L-Benerd-School-of-Education/Academics/Masters

Location: Gladys L. Benerd Building

Degree Program

Master of Arts in Education

Concentrations are offered in the following areas:

Counseling and School Psychology

- Counseling Psychology

Learning, Leadership, and Change

- Innovative Education in Health Professions

Teacher Education

- Special Education
- Teaching (Credential Option)

Master of Arts in Leadership

- Organizational Innovation and Change
- Leading for Social Impact

Admissions Requirement

1. A cumulative GPA of 2.65 or better in all postsecondary coursework or the last 60 units of college or post-baccalaureate work
2. A Bachelor's degree from an accredited university
3. A complete application portfolio to Graduate Admissions, essay(s) following program guidelines; official transcripts from all college-level coursework including official verification of the awarding of degrees; and two completed references forms
4. Faculty interview, if required.
5. Evidence of qualities and character in keeping with the philosophy and standards of this University and Benerd College

Credentialing and Licensing

Credential programs may be combined with the master's degree or the doctorate in education. The MA in Education, Teaching concentration, or Special Education concentration, offers programs for earning a Multiple Subject, Single Subject, in selected content areas, and Education Specialist, Mild-Moderate; Moderate/Severe Disabilities credentials. The Counseling Psychology Concentration includes an optional track (beyond

the 32 unit minimum) to become eligible for the Licensed Professional Clinical Counselor (LPCC).

Pacific Undergraduate to Master's Pathway

Pacific undergraduates can complete up to 6 units of MA in Leadership coursework as part of a pathway degree program if the student has an overall undergraduate GPA of 3.0. Successful completion of coursework will double count toward the undergraduate degree and graduate degree requirements; credits will not be applied to the graduate transcript until the requirements of the undergraduate degree are met.

Students in the undergraduate Organizational Leadership or Healthcare Administration and Leadership programs can transfer their leadership capstone into the master's program. Students in other majors can complete up to two LEAD courses as an undergraduate, as part of elective coursework. See the "Program" tab for more information.

Research

1. Students will be able to locate appropriate resources of and critically evaluate educational research literature.

Diversity

1. Students will be able to critically analyze how the presence of diverse populations influences policy and practice.

Teaching and Learning

1. Students will be able to develop learning outcomes (e.g. individual group, organizational, or system) by synthesizing knowledge, skills, and reflective practice of human learning processes.

Program Purpose: To Develop Creative, Flexible, and Caring Leaders

1. Lead in an ethical and socially responsible manner
2. Utilize inquiry-based approaches to fostering change
3. Identify, understand, and utilize cultural differences and perspectives of all stakeholders
4. Develop and integrate a critically reflective lens on leadership development

Concentration-specific Outcomes

Leading for Social Impact: Develop skills and perspectives needed to enact ethical and sustainable change in one's community, organization or beyond.

Organizational Innovation and Change: Develop skills to lead the development of people, performance, and organizations

Master of Arts in Education

The Master of Arts (MA) in Education requires a minimum of 32 units, of which 18 units must be in courses 200 or above and from the Benerd College, with a Pacific cumulative grade point average of 3.0. Based upon state and federal laws, additional units and requirements may be necessary for those students electing to earn a credential, certification or license along with the graduate degree (e.g., teaching credential, and administration credential). Students interested in earning a credential, certification or license should work closely with their advisor and the credential staff. The requirements of some concentration options may also be guided by external standards that direct completion of specified courses and achievement of specific learning outcomes.

For students entering the Licensed Professional Clinical Counselor (LPCC) track within the Counseling Psychology Concentration (see above), . EDUC 201 and EDUC 216 may be taken during the student's

senior year at Pacific, which will be counted toward the master's and the bachelor's degree.

Unit Requirement: 32

I. Theoretical Core:

Select one of the following: 2-4

EDUC 204	Education for a Diverse Democracy
EDUC 220	Seminar: Social Class Effects in Education
EDUC 230	Leading in Diverse Contexts
EDUC 259	Teaching English Learners - Single Subject
EDUC 334	Theories of Multicultural Family Therapy and Collaboration

Select one of the following: 2-4

EDUC 209	Curriculum Theory
EDUC 216	Nature and Conditions of Learning
EDUC 250	Teaching Assessment
EDUC 255	Teaching in the Content Areas I
EDUC 237	Organizational Learning
SPED 242M	Curriculum and Instruction for Students with Mild/Moderate Disabilities
SPED 242	Curriculum and Instruction for Students with Mild/Moderate and Mod/Severe Disabilities

II. Field Experience and/or Research:

Select 4-6 units from the following: 4-6

Research Course Options:

EDUC 201	Techniques of Research
EDUC 202	Statistical Thinking and Communication
EDUC 221	Research in Second Language Acquisition
EDUC 246 & EDUC 266 & EDUC 276	Teaching as Reflective Inquiry I and Transformational Teaching & Learning and Teaching as Reflective Inquiry III
EDUC 274	Action Research
EDUC 296	Integrative Capstone in Innovative Leadership
EDUC 304	Program Evaluation
Other approved research courses	

Field Experience Course Options:

EDUC 170/270 or EDUC 171/271	Professional Practice Professional Practice Music
SPED 198M & SPED 298M or SPED 198S/298S	Directed Teaching: Mild/Moderate and Directed Teaching: Special Education (Mild/Moderate) Directed Teaching: Moderate/Severe
SPED 298IM	Internship: Mild/Moderate
SPED 298IS	Internship: Moderate/Severe

Note: 1.) Students will not receive credit for EDUC 170 /EDUC 270 and EDUC 171/EDUC 271. 2.) Students will not receive credit for SPED 198M/SPED 298M and SPED 198S/SPED 298S.

III. Capstone Experience

Students will be required to complete a capstone experience (e.g., oral exam, portfolio, thesis, action research project and/or written comprehensive exam). The capstone experience will be determined

within each concentration. Some concentrations integrate the Field Experience and Capstone into a course (e.g. EDUC 296, EDUC 296T). Other concentrations have courses with integrative teacher research experiences, which fulfill the capstone requirement (e.g. EDUC 276, or SPED 295A). For students who do not elect not to earn a concentration, his or her advisor will select an appropriate capstone experience.

IV. Concentration

Students may elect to concentrate in one or more specific areas. In order to earn a concentration, students must fulfill the general requirements listed above as well as specific concentration requirements listed below.

A single course may be used to fulfill requirements in two or more concentrations, but the units will not count twice.

Core Area Concentrations

Innovative Education in Health Professions

Select 12 units of the following:	12
EDUC 215 Creativity and Ideation	
EDUC 279 Innovation in Education	
EDUC 290 Digital and Blended Learning	
EDUC 295D Trends in Health Professions Education	
EDUC 295M Seminar: Learning Design	
EDUC 295P Teaching and Assessment in Health Professions Education	
EDUC 372 Program and Organization Evaluation	

Learning, Innovation, and Design

Select 12 units of the following:	12
EDUC 209D Principles of Design in Education	
EDUC 209M Models of Learning	
EDUC 215 Creativity and Ideation	
EDUC 279 Innovation in Education	
EDUC 290 Digital and Blended Learning	
EDUC 295M Seminar: Learning Design	
EDUC 295I Innovative Learning Environments	

Counseling Psychology

Select 12 units of the following:	12
EDUC 304 Program Evaluation	
EDUC 330 Advanced Human Development I	
EDUC 331 Advanced Human Development II	
EDUC 332 Advanced Human Development III	
EDUC 334 Theories of Multicultural Family Therapy and Collaboration	
EDUC 335 Psychotherapeutic Interventions	
EDUC 336 Group Counseling	
EDUC 337 Crisis Intervention	
EDUC 338 Consultation Methods	
EDUC 341 History and Systems in Psychology	
EDUC 342 Law and Professional Ethics for Mental Health Professionals	
EDUC 343 Psychopathology and Wellness Promotion	
EDUC 344 Behavior Assessment and Intervention	
EDUC 345 Academic Assessment and Intervention	
EDUC 346 Psychological Assessment	
EDUC 347 Behavior and Personality Assessment	
EDUC 348 Neuropsychology	

EDUC 349 Psychopharmacology for Mental Health Professionals	
EDUC 350 Social Psychology	
EDUC 367 Seminar: Leadership in Diverse Organizations	
EDUC 384 Spousal and Partner Abuse, Detection, and Intervention	
EDUC 385 Alcoholism and Chemical Substance Abuse Dependency	
EDUC 386 Child Abuse Assessment and Reporting	
EDUC 387 Human Sexuality	
EDUC 388 Counseling Practicum	

Or any Special Topics course (EDUC 393)
 Undergraduate students who plan to pursue Licensed Professional Clinical Counselor may take EDUC 201 and EDUC 216 during their senior year at UOP, which will be counted toward the MA in Education with a concentration in Counseling Psychology

Teaching (Credential Option)

Select 12 units of the following:	12
EDUC 130 Technology Enhanced Learning Environments *	
EDUC 153 Teaching Science, Technology, Engineering, and Mathematics *	
or EDUC 253 Teaching Science, Technology, Engineering and Mathematics (STEM)	
EDUC 160 Productive Learning Environments for Diverse Secondary Classrooms *	
or EDUC 254 Productive Learning Environments for Diverse Adolescents	
EDUC 161 Literacy Development (Multiple Subject) *	
or EDUC 261 Literacy Development	
EDUC 163 Teaching English Learners	
or EDUC 263 Teaching English Learners	
EDUC 166 Teaching English Learners, Single Subject	
or EDUC 259 Teaching English Learners - Single Subject	
EDUC 172 Professional Practice Seminar	
or EDUC 272 Professional Practice Seminar	
EDUC 246 Teaching as Reflective Inquiry I	
EDUC 254 Productive Learning Environments for Diverse Adolescents	
EDUC 255 Teaching in the Content Areas I	
EDUC 256 Content and Disciplinary Literacy Development in Secondary Schools	
EDUC 260 Productive Learning Environments for Diverse Classrooms	
EDUC 265 Teaching in the Content Areas II	
EDUC 266 Transformational Teaching & Learning	
EDUC 267 Understanding Adolescents in School Contexts	
EDUC 275 Teaching in Content Areas III	
EDUC 276 Teaching as Reflective Inquiry III	
MEDU 114 Music in Elementary School	
MEDU 115 Music Experiences, K-6	
MEDU 116 Music in Secondary School	
MEDU 117 Music Experiences, 7-12	
SPED 125X Teaching Exceptional Learners	
or SPED 225X Teaching Exceptional Learners	
SPED 266 Building Family & Professional Partnerships	
SPED 224 Assessment of Special Education Students *	

SPED 228	Advanced Programming for Students with Disabilities
SPED 231	Evidence Based Practices in Autism Spectrum Disorder
SPED 242M or SPED 242	Curriculum and Instruction for Students with Mild/Moderate Disabilities * Curriculum and Instruction for Students with Mild/Moderate and Mod/Severe Disabilities
SPED 295A	Seminar: Crucial Issues in Special Education
SPED 295E	Positive Behavioral Support in the Classroom

Special Education

Select 12 units of the following: 12

SPED 266	Building Family & Professional Partnerships
SPED 224	Assessment of Special Education Students
SPED 228	Advanced Programming for Students with Disabilities
SPED 231	Evidence Based Practices in Autism Spectrum Disorder
SPED 232	Juvenile Biplor Disorder
SPED 242M	Curriculum and Instruction for Students with Mild/Moderate Disabilities
SPED 242	Curriculum and Instruction for Students with Mild/Moderate and Mod/Severe Disabilities
SPED 295A	Seminar: Crucial Issues in Special Education
SPED 295E	Positive Behavioral Support in the Classroom
SPED 298M	Directed Teaching: Special Education (Mild/Moderate)

Note: 1.) Specific courses are subject to change as per state requirements. Students must meet all state requirements in order to earn a credential. 2.) Minimum of required 12 units with specific courses determined by state credential requirements and advisers' approval required. Although the Master of Arts in Education requires a minimum of 12 units, credential programs may require additional units. 3.) *If these courses were taken in the undergraduate program, then electives will be required as substitutions.

V. Of the required 32 units a minimum of 18 units must be from the Benerd College

VI. Of the required 32 units a minimum of 18 units must be taken at the 200 or 300 level

Master of Arts in Leadership

The Master of Arts (MA) in Leadership requires a minimum of 32 units, with a Pacific cumulative grade point average of 3.0. Students can take a LEAD 202 during their senior year at Pacific and transfer it into this program. The course can be counted toward both the master's and the bachelor's degree.

Students can take up to 6 units of the following courses as an undergraduate or prior to master's enrollment, as part of Pacific Pathways: LEAD 200 (cross-listed with ORGL 199) or LEAD 202. Up to 6 units can be applied toward the master's, bachelor's, and applicable pre-degree certificates program in Benerd.

Unit Requirement: 32

1. Leadership Core

LEAD 200	Exercising Leadership	3
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2. Inquiry Core

LEAD 210	Leadership and Inquiry	3
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3. Capstone

Students will be required to complete a capstone experience, which includes an integrative portfolio and field experience. This experience is completed as part of one of the LEAD 296 courses:

LEAD 296L	Integrative Capstone in Innovative Leadership
LEAD 296S	Integrative Capstone for Social Impact

4. Core Area Concentrations

Students may elect to concentrate in one or more specific areas. To earn a concentration, students must fulfill the general requirements listed above and specific concentration requirements listed below. A single course may be used to fulfill requirements in two or more concentrations.

Leading for Social Impact

LEAD 201	The Ethical Leader	3
LEAD 260	How to Change the World	3
LEAD 261	Design Thinking for Social Impact	3
LEAD 265	Reflective Practice for Leadership & Social Impact	3

Organizational Innovation and Change

LEAD 255	Design Thinking	3
LEAD 256	Change in Complex Systems	3
LEAD 258	Organizational Consulting	3
LEAD 259	Organizational Learning	3

5. Remaining Units

Of the required 32 units, 23 units must be from Benerd College. Cohorts will have more prescriptive requirements.

Doctorate of Education

<http://www.pacific.edu/Academics/Schools-and-Colleges/Gladys-L-Benerd-School-of-Education/Academics/Doctoral>
Location: Gladys L. Benerd Building

Degree Program

Doctorate of Education

Concentrations (Specializations/Cognates) are offered in the following areas:

- Counseling Psychology (Psychologist License Eligible)
- Leadership and Innovation
- Transformative Action in Education

Admissions Requirement

1. A cumulative GPA of 3.0 or better for the last 60 units of college or post-baccalaureate work
2. An appropriate degree from an accredited university (master's degree for admission to doctoral programs).
3. A completed application portfolio to Graduate Admissions, an essay(s) following concentration-specific guidelines; official transcripts from all college-level coursework including official verification of the awarding of degrees; and three letters of recommendation that attests to the candidate's ability to undertake doctoral studies.
4. Interviews with faculty are required for the EdD program.
5. Evidence of qualities and character in keeping with the philosophy and standards of this University and Benerd Education Programs.

6. Some programs may have additional requirements. Please contact the Program Lead for additional information.

Program Stages

The approval of the dissertation proposal by the student's committee advances the student to Doctoral Candidacy.

Dissertation

An acceptable dissertation must be based on an original investigation. It must present either a contribution to knowledge and/or understanding, or an application of existing knowledge to the candidate's special field of study. The dissertation must be submitted by the appropriate deadlines as stated in the current Graduate Academic Calendar. As noted above, students admitted to the EdD program in the Benerd College require a minimum of 2 units and maximum of 5 units of Dissertation units (EDUC 399) that are completed after the dissertation proposal has been completed. After coursework is completed, students must register for at least one unit of EDUC 399 in each semester (including once during summer) to maintain active student status until the dissertation has been successfully defended, unless on an approved leave of absence. Students are not required to register in the semester immediately following a successful final defense.

Period of Candidacy

The maximum time allowed for completion of an EdD program is governed by the following: All requirements for the Doctor of Education degree must be completed within the time limit outlined in the Residence and Time Limits section (<https://catalog.pacific.edu/stocktongraduate/academicregulations/#Residence>) of the Academic Regulations page of the graduate catalog. Students who do not meet these deadlines are dropped from the doctoral program.

Final Oral Examination

A final oral examination, conducted by the candidate's dissertation committee, is held in accordance to the deadline established by the Graduate School. This oral exam concerns itself with the candidate's dissertation. Supplemental information is available in the Benerd College department offices.

Semester Hour Requirements

A minimum of 56 doctoral units is required for the EdD degree. Some (usually no more than 6) post master degree units may be approved by petition for transfer from another university and count toward the 56 doctoral units.

Students who take doctoral core courses at part of a MA degree completed at Pacific may count those units towards their EdD. Students graduating from a 32-unit program in Benerd can count up to 6 units requirements toward both degrees.

Students who receive the EdS degree and then decide to apply to the EdD or who are seeking the degrees concurrently may count 28 units from their EdS degree towards their EdD. Students concurrently working on the EdS and EdD may count the 28 units from the EdS towards the EdD if the EdS degree posts before the EdD. Students need to obtain a minimum of 28 units beyond the EdS to obtain the EdD.

Students who are working towards a MA degree with a concentration in Counseling Psychology that exceeds 32 units may apply for and enroll in the EdD with a concentration in Counseling Psychology after successful completion of their first 32 units in the MA degree.

Students who receive the MA degree with a concentration in Counseling Psychology and then decide to apply to the EdD with a concentration in Counseling Psychology or who are seeking the degrees concurrently may

count units taken after the first 32 units in the MA degree towards their EdD.

Students who graduated from Benerd's MA in Leadership can apply the following courses to both degrees: LEAD 296L/LEAD 296S (in place of EDUC 368) and LEAD 215 (in place of EDUC 372).

If students complete their MA degree requirements before completing their EdD requirements, they may be awarded the MA degree before completing EdD requirements.

Credit value of the dissertation: Not less than 2 nor more than 5 units.

Grade Point Average Requirements

Grade point average of at least 3.0 in all work taken while in graduate studies is required. Preferably this should be 3.5.

Minimum Residence

The period of residence work represents an opportunity to secure additional competency in the area of specialization as well as the development of an acceptable dissertation. Residency requirement can be met by taking 18 units of coursework within 12 calendar months.

Courses Outside the Field of Education

Related graduate courses outside the field of education may count towards the EdD upon prior approval of the advisor and the Dean of Benerd College.

Students will be able to:

- Contribute to their discipline through conducting an original research study
- Critique and synthesize existing information relevant to their area of inquiry
- Apply appropriate methodologies to their process of inquiry
- Analyze data gathered through their process of inquiry and draw appropriate conclusions from that data
- Synthesize their results with previously existing information

Doctorate of Education

The Doctorate of Education (EdD) requires a minimum of 56 units with a Pacific cumulative grade point average of 3.0. Students must complete the doctoral core courses as well as a dissertation proposal and defense.

Based upon state and federal laws, additional units and requirements may be necessary for those students electing to earn a credential, certification or license along with the graduate degree (e.g., teaching credential, licensed educational psychologist, or licensed psychologist). Students interested in earning a credential, certification or license should work closely with advisor and credential staff. Student may choose to specialize in one or more areas. Students will be required to complete a dissertation at the conclusion of the program.

I. Core

Option A - A minimum of 21 units. Required option for all concentrations with the exception of Educational Psychology and Specialization in Counseling Psychology.

EDUC 202	Statistical Thinking and Communication	3
EDUC 322	Qualitative Methods for Action-Oriented Research	3
EDUC 325	Quantitative Research Design and Methods	3
EDUC 352	Applied Inquiry I	3
EDUC 354	Applied Inquiry II	3

EDUC 356	Applied Inquiry III	3
EDUC 358	Applied Inquiry IV	3

Option B - A minimum of 21 units. Required for Educational Psychology and Specialization in Counseling Psychology concentrations.

EDUC 201	Techniques of Research	3
EDUC 202	Statistical Thinking and Communication	3
EDUC 304	Program Evaluation	3
EDUC 325	Quantitative Research Design and Methods	3
EDUC 326	Applied Multiple Regression	3
EDUC 327	Structural Equation Modeling	3
EDUC 352	Applied Inquiry I	3

II. Research and Dissertation

(Minimum 5 units)

EDUC 399	Doctoral Dissertation	2-5
Education Electives related to Dissertation at 200-300 level		0-3

III. Concentrations

Students may elect to specialize in one or more specific areas. In order to earn a specialization concentration, students must fulfill the general requirements listed above as well as specific specialization concentration requirements listed below. A single course may be used to fulfill requirements in two or more specializations concentrations.

Students interested in earning a credential or license along with the degree will need to fulfill specific requirements as mandated by state and national governing organizations. In order to ensure these requirements are fulfilled, the student must work closely with an academic advisor and the credential staff in the Benerd College.

Specialization Concentrations

Counseling Psychology (Psychology license eligible)

18 units of Specialization courses:		18
EDUC 335	Psychotherapeutic Interventions	3
EDUC 336	Group Counseling	3
EDUC 342	Law and Professional Ethics for Mental Health Professionals	3
EDUC 343	Psychopathology and Wellness Promotion	3
EDUC 346	Psychological Assessment	3
EDUC 348	Neuropsychology	3

Elective Courses list

EDUC 330	Advanced Human Development I	
EDUC 331	Advanced Human Development II	
EDUC 332	Advanced Human Development III	
EDUC 334	Theories of Multicultural Family Therapy and Collaboration	
EDUC 337	Crisis Intervention	
EDUC 338	Consultation Methods	
EDUC 341	History and Systems in Psychology	
EDUC 344	Behavior Assessment and Intervention	
EDUC 345	Academic Assessment and Intervention	
EDUC 347	Behavior and Personality Assessment	
EDUC 349	Psychopharmacology for Mental Health Professionals	
EDUC 350	Social Psychology	

EDUC 384	Spousal and Partner Abuse, Detection, and Intervention	
EDUC 385	Alcoholism and Chemical Substance Abuse Dependency	
EDUC 386	Child Abuse Assessment and Reporting	
EDUC 387	Human Sexuality	
EDUC 388	Counseling Practicum	
Or any Special Topics course (EDUC 393)		

Leadership and Innovation

Select 18 units from the following Specialization courses: 18

EDUC 360	Trends, Issues, and Dynamics of Change	
EDUC 364	Policy Analysis, Creation, and Navigation	
EDUC 367	Seminar: Leadership in Diverse Organizations	
EDUC 368	Seminar: Leading Complex Organizations	
EDUC 372	Program and Organization Evaluation	
EDUC 380	Leading Innovation	

Transformative Action in Education

Select 18 units from the following Specialization courses: 18

EDUC 314	Socio-Cultural Perspectives and Inquiry	
EDUC 315	Cultural, Social, and Emotional Literacy	
EDUC 316	Systems Thinking and Interdisciplinary Curriculum Inquiry	
EDUC 317	Aesthetics, Arts, and Imagination as Curriculum Context	
EDUC 319	Teaching as a Subversive Activity	
EDUC 353	Interdisciplinary Ways of Seeing, Knowing, and Acting	
EDUC 360	Trends, Issues, and Dynamics of Change	
EDUC 368	Seminar: Leading Complex Organizations	
EDUC 372M	Measuring Social Impact	

IV. Of the required 56 units a minimum of 18 units must be from the Benerd College

V. Of the required 56 units a minimum of 18 units must be taken at the 200 or 300 level

Educational Specialist in School Psychology

<http://www.pacific.edu/Academics/Schools-and-Colleges/Gladys-L-Benerd-School-of-Education/Academics/EdS-%28Education-Specialist%29-in-School-Psychology>

Phone: (209) 946-2559

Location: Gladys L. Benerd Building

Justin Low, PhD, Program Lead

Degree Programs

Educational Specialist in School Psychology (EdS)

- with a Pupil Personnel Services Credential in School Psychology

Credentials Offered

Pupil Personnel Services Credential in School Psychology

Admissions Requirements

1. Students must hold a master's degree in Educational Psychology, Counseling Psychology, Psychology, or a closely related field.

2. A cumulative GPA of 3.0 or better in the master's program.
3. A completed application portfolio to the Office of Admission, an essay emphasizing the desire to work as a school psychologist in the public schools; official transcripts from all college level coursework including official verification of the awarding of degrees; and three letters of recommendation that attest to the candidate's ability to undertake graduate studies.
4. An admissions interview with representative(s) of the Department of Counseling and School Psychology.
5. Evidence of qualities and character in keeping with the philosophy and standards of this University and the profession of School Psychology.

Program Overview

The program intends to prepare highly effective school psychologists who apply skills in data-based decision making and accountability for work with individuals, groups, and programs. Additional goals include preparing highly effective school psychologists who apply developmental knowledge from cognitive, learning, social and emotional domains across diverse socio-cultural and linguistic contexts and ensuring school psychologists can demonstrate the necessary positive interpersonal skills they need to facilitate communication and collaboration among students, school personnel, families, and other professionals. The program is designed to prepare highly effective school psychologists who are knowledgeable regarding the developmental issues and needs of both regular and special education.

The Educational Specialist degree in school psychology leads to a Pupil Personnel Services Credential in school psychology. Students typically apply to the Master of Arts degree with a concentration in Counseling Psychology. Successful completion of the MA degree allows the student to apply to the EdS degree. Students who have a masters degree in Educational Psychology, Counseling Psychology, Psychology, or a closely related field may apply directly to the EdS degree. For students that enter the program with a baccalaureate degree, the program requires two years of full-time coursework with fieldwork, and culminates in an additional third-year internship. The Masters degree is typically awarded after the first year of study and the EdS degree is awarded after the third year internship. Students may also enroll in the program on a part-time basis. Upon receiving the Masters degree students may also apply to the EdS and EdD degrees for concurrent enrollment. Students who concurrently enroll in the EdS/ EdD need to have a minimum of 56 units beyond the Masters degree. Students who receive the EdS degree and then decide to apply to the EdD need to obtain a minimum of 28 units beyond the EdS to obtain the EdD.

Students will be able to demonstrate competence in:

- Data-based decision-making and accountability
- Consultation and collaboration
- Interventions and instructional support to develop academic skills
- Interventions and mental health services to develop social and life skills
- School-wide practices to promote learning
- Preventive and responsive services
- Family-school collaboration services
- Diversity in development and learning
- Research and program evaluation
- Legal, ethical, and professional practice

Educational Specialists in School Psychology

The Educational Specialist (EdS) in School Psychology requires a minimum of 28 units beyond a Masters degree in Educational Psychology, Counseling Psychology or closely related field with a Pacific cumulative grade point average of 3.0. Students must complete a minimum of 60 graduate units, inclusive of the units earned for the Masters degree and complete a final culminating field experience and a capstone experience.

Based upon state and federal laws, additional units and requirements may be necessary for those students electing to earn a credential, certification or license along with the graduate degree (e.g., pupil personnel credential, licensed educational psychologist). Students interested in earning a credential, certification or license should work closely with advisor and credential staff.

I. Core

Select 22 units from the following:

EDUC 201	Techniques of Research
EDUC 202	Statistical Thinking and Communication
EDUC 216	Nature and Conditions of Learning
EDUC 304	Program Evaluation
EDUC 330	Advanced Human Development I
EDUC 331	Advanced Human Development II
EDUC 334	Theories of Multicultural Family Therapy and Collaboration
EDUC 335	Psychotherapeutic Interventions
EDUC 336	Group Counseling
EDUC 337	Crisis Intervention
EDUC 338	Consultation Methods
EDUC 340	Introduction to School Psychology
EDUC 341	History and Systems in Psychology
EDUC 342	Law and Professional Ethics for Mental Health Professionals
EDUC 343	Psychopathology and Wellness Promotion
EDUC 344	Behavior Assessment and Intervention
EDUC 345	Academic Assessment and Intervention
EDUC 346	Psychological Assessment
EDUC 347	Behavior and Personality Assessment
EDUC 348	Neuropsychology
EDUC 396	School Psychology Fieldwork

II. Final Culminating Field Experience

(Minimum 6 units)

EDUC 398	School Psychology Internship
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III. Capstone Experience

Students will be required to complete a capstone experience in the form of a portfolio examination that addresses competencies in the domains of school psychology as delineated by the National Association of School Psychologists.

Students interested in earning a credential or license along with the degree will need to fulfill specific requirements as mandated by state and national governing organizations. In order to ensure these requirements

are fulfilled, the student must work closely with an academic advisor and the credential staff in the Benerd College.

Note: 1) Specific courses are subject to change as per state requirements. Students must meet all state requirements in order to earn a credential. 2) Minimum of required 28 units with specific courses determined by state credential requirements and advisors' approval required. Although the Educational Specialist degree requires a minimum of 28 units, in order to obtain the credential, additional units may be required.

Clinical Laboratory Scientist Certificate

Patricia J. Campbell, Ph.D., Dean

Suspended: Clinical Laboratory Scientist Certificate

The Clinical Laboratory Scientist Certificate Program at the University of the Pacific is a post-baccalaureate certificate program, delivered in three trimesters through Benerd College. It will consist of an initial face-to-face curriculum to prepare students for their experiential learning phase, and incorporation of didactic modules (primarily online) throughout the internship training at approved clinical laboratory sites.

Admissions requirements:

Must have a current Clinical Laboratory Scientist Trainee License for the State of California to enroll in the program. The following are State of California academic requirements to apply for a trainee license:

Bachelor's degree with the following course requirements:

- 16 semester or equivalent quarter units of chemistry, which must include clinical chemistry OR analytical and biochemistry.
- 18 semester or equivalent quarter units of biology, which must include hematology, immunology, and medical microbiology.
- 3 semester or equivalent quarter units of physics (light and electricity)

University Requirements:

- § GPA of 3.0 overall and Hematology, Immunology, Medical Microbiology taken with 5 years with a grade of B or better.
- § Three letters of recommendations
- § Be legally able to work in the United States

Program Learning Outcomes

- Determine the clinical significance of laboratory tests
- Troubleshoot issues with questionable quality control or patient results
- Utilize complex theoretical concepts, which are the basis of laboratory testing, to interpret the significance of laboratory test results
- Validate procedures and new testing methodology
- Consistently critical review and analyze patient testing results to ensure quality results

The Clinical Laboratory Scientist Certificate requires a minimum of 45 units.

Certificate Requirements

Trimester 1

CLSC 211	Laboratory Skills and Management for CLD	1
CLSC 221	Introduction to Clinical Laboratory Procedures	2

CLSC 287A	CLS Clinical Rotation	12
Trimester 2		
CLSC 287B	CLS Clinical Rotation	15
Trimester 3		
CLSC 231	Clinical Experience Summation	1
CLSC 287C	CLS Clinical Rotation	14

Clinical Lab Sci Cert Courses

CLSC 211. Laboratory Skills and Management for CLD. 1 Unit.

Quality assessment, Safety, laboratory Management, Laboratory Math, Instrumentation, Molecular techniques, Education, Communication, Laboratory information, Laboratory Regulations. Prerequisites: Admission to Clinical Lab Science certificate program.

CLSC 221. Introduction to Clinical Laboratory Procedures. 2 Units.

Demonstration and practice of specialized techniques used in the clinical setting. Introduction to clinical laboratory techniques including Urinalysis and Hematology methods and the processing of body fluids will be discussed as well as practiced. Phlebotomy is introduced including theory of arterial, capillary and venipuncture with attention focused on pre-analytical phlebotomy errors. Review of state/federal laws, biohazards and quality assurance. Prerequisites: Admission to Clinical Lab Science certificate program.

CLSC 231. Clinical Experience Summation. 1 Unit.

Review for the American Society for Clinical Pathology (ASCP) national exam for Clinical Laboratory Scientists. Review will focus on application of information learned throughout the program including skills and application of knowledge to patient care, quality assessment, laboratory regulations, and clinical laboratory procedures. Prerequisites: Admission to Clinical Lab Science certificate program.

CLSC 287A. CLS Clinical Rotation. 12 Units.

Clinical laboratory experiential learning, with didactic component, in one or more of the clinical rotations required for the Clinical Lab Science certification: Hematology, Coagulation, Microbiology, Urinalysis, Immunohematology/Transfusion Medicine, Immunology, Parasitology and Special Procedures. Prerequisites: Admission to Clinical Lab Science certificate program.

CLSC 287B. CLS Clinical Rotation. 15 Units.

Clinical laboratory experiential learning, with didactic component, in one or more of the clinical rotations required for the Clinical Lab Science certification: Hematology, Coagulation, Microbiology, Urinalysis, Immunohematology/Transfusion Medicine, Immunology, Parasitology and Special Procedures. Prerequisites: Admission to Clinical Lab Science certificate program.

CLSC 287C. CLS Clinical Rotation. 14 Units.

Clinical laboratory experiential learning, with didactic component, in one or more of the clinical rotations required for the Clinical Lab Science certification: Hematology, Coagulation, Microbiology, Urinalysis, Immunohematology/Transfusion Medicine, Immunology, Parasitology and Special Procedures. Prerequisites: Admission to Clinical Lab Science certificate program.

Stackable Certificates

Patricia J. Campbell, Ph.D., Dean

Stackable Certificates

- Certificate in Leadership for Health Education
- Certificate in Leading and Facilitating Innovation
- Certificate in Learning, Innovation, Design

- Certificate in Teaching, Innovation, and Design
- Certificate in Leadership for Social Impact
- Certificate in Strategic Consulting
- Teacher Leadership Certificate

Benerd College's Stackable Certificates can be obtained before or while a student is enrolled in an applicable master's program in Benerd. These certificates can also be earned as standalone options.

Admission Requirements

Teacher Leadership Certificate Admission Requirements

- Bachelor's degree
- At least 3 years teaching experience

Other Certificate Programs Admission Requirements

A university transcript demonstrating a bachelor's degree from an accredited higher education institution with a GPA of 2.65 or better. Or a university transcript demonstrating a Master's or doctoral degree from an accredited higher education institution with a GPA of 3.0 or better.

General Information

Certificate in Teaching, Innovation, and Design

Certificate in Teaching, Innovation, and Design is a four course (12 unit) for-credit certificate that is designed for those interested in applying design thinking to create innovative approaches to teaching. The certificate can be taken as a standalone accelerated pathway for students seeking to use design thinking to create innovations in their workplace. Students can also stack this certificate into Master's Concentration in Health Professions Education or our Master's Concentration in Learning, Innovation, and Design.

Certificate in Learning, Innovation, and Design

Certificate in Learning, Innovation, and Design is a four course (12 unit) for-credit certificate that is designed for those interested in learning how to be a more creative educator and trainer. The certificate can be taken as a standalone accelerated pathway for students who want to enhance their knowledge of the principles of learning and their ability to create dynamic and personalized learning. Students can also stack this certificate into our Master's Concentration in Learning, Innovation, and Design.

Certificate in Leadership in Health Education

Certificate in Leadership in Health Education is a four course (12 unit) for-credit certificate that is designed for those interested in leadership positions within the field of teaching in the health professions. The certificate can be taken as a standalone accelerated pathway for those interested in developing effective health related educational programs or the courses can be stacked into our Master's Concentration in Innovation Education in Health Professions.

Certificate in Leadership for Social Impact

Certificate in Leadership for Social Impact is a four course (12 unit) for-credit certificate that is designed for those interested in learning how to lead organizations for social impact. The certificate can be taken as a standalone accelerated pathway for advancing our understanding of the social barriers that reinforce social inequalities, while developing strategies for dismantling the structures that support existing systems of privilege. Students can also stack this certificate into our Master's Concentration in Leading for Social Impact.

Certificate in Leading and Facilitating Innovation

Certificate in Leading and Facilitating Innovation is a four course (12 units) for-credit certificate designed for those interested in organizational innovation, either as a leader or as a facilitator. The certificate can be taken as a standalone accelerated pathway for those interested in developing hands-on skills with innovation, leadership, and change tools. The courses can also be stacked into our Master's Concentration in Organizational Innovation and Change.

Certificate in Strategic Consulting

Certificate in Strategic Consulting is a four course (12 units) for-credit certificate designed for those interested in internal or external consulting for strategic purposes. The certificate can be taken as a standalone accelerated pathway for those interested in developing hands-on skills in consulting, facilitation, innovation, and organizational learning. The courses can also be stacked into our Master's Concentration in Organizational Innovation and Change.

Certificate in Teaching, Innovation, and Design

- Evaluate existing innovations to develop an applied project that designs new innovations for education and social sectors.
- Utilize design thinking tools to create lessons that apply appropriate learning principles.
- Create systems for multiple modality learning.

Certificate in Learning, Innovation, and Design

- Develop Core Knowledge of Principles of Learning
- Create Innovative Learning Environments
- Develop Engaging and Relevant Instructional Delivery
- Utilize Technology to Improve Collaboration, Personalization, and Interaction
- Design Learning Models that Promote Creativity & Measure Impact

Certificate in Leadership in Health Education

- Apply evidence-based strategies to innovate educational practice at your institution and in health sciences education in general.
- Create plans for innovative learning environment implementation.
- Identify leadership strengths and develop a plan that will help you determine which leadership approaches to use in various situations and to build upon those strengths moving forward.
- Develop a program evaluation proposal that is grounded in best practices and implement it using data collection tools and analyze the results.

Certificate in Leadership for Social Impact

- Evaluate and critique the institutions and social barriers that retain and reinforce inequality
- Develop frameworks to critique and dismantle positions of power and privilege that create and maintain social impact issues
- Examine how globalization can simultaneously reinforce and undermine individual and group identity
- Reflect on your role as a leader in supporting and/or disrupting social impact.
- Create a vision for change in an area of interest and your commitment to that change

Certificate in Leading and Facilitating Innovation

- Apply leadership skills in dynamic, complex situations
- Facilitate a human-centered design process to create a user-centered solution to an organizational challenge.

Certificate in Strategic Consulting

- Develop a consultant-client helping relationship to facilitate and support the implementation of change.
- Facilitate groups to achieve shared understanding and agreement while fostering a psychologically safe environment.
- Evaluate programs, processes, or services using collaborative, data-informed methods.
- Foster learning, growth, and renewal through facilitation to develop people, environment, and processes within organizations.

Certificate in Teaching, Innovation, and Design

Students are required to complete all four three-unit courses, total of 12 units for the certificate.

EDUC 279	Innovation in Education	3
EDUC 295M	Seminar: Learning Design	3
EDUC 290	Digital and Blended Learning	3
EDUC 216	Nature and Conditions of Learning	3

Teacher Leadership Certificate

EDUC 214	Supervision of Instruction	3
EDUC 274	Action Research	3
EDUC 285	Leadership Fundamentals	3
Elective Courses		6 - 9
EDUC 204	Education for a Diverse Democracy	
EDUC 230	Leading in Diverse Contexts	
EDUC 283	School Finance and Business Administration	
EDUC 280	Education Law and Legal Processes	
EDUC 286	Administration of Human Resources	
SPED 295A	Seminar: Crucial Issues in Special Education	
SPED 295C		

Certificate in Learning, Innovation, and Design

Students are required to complete all four three-unit courses, total of 12 units for the certificate.

EDUC 279	Innovation in Education	3
EDUC 295M	Seminar: Learning Design	3
EDUC 215	Creativity and Ideation	3
EDUC 295I	Innovative Learning Environments	3

Certificate in Leadership in Health Education

Students are required to complete all four three-unit courses, total of 12 units for the certificate.

EDUC 295D	Trends in Health Professions Education	3
EDUC 295P	Teaching and Assessment in Health Professions Education	3
EDUC 230	Leading in Diverse Contexts	3
EDUC 372	Program and Organization Evaluation	3

Certificate in Leadership for Social Impact

Students are required to complete all four three-unit courses, total of 12 units for the certificate.

LEAD 221	Facilitation of Projects and Initiatives	3
LEAD 260	How to Change the World	3
LEAD 261	Design Thinking for Social Impact	3
LEAD 262	Understanding Social Impact & Change	3

Certificate in Leading and Facilitating Innovation

Students are required to complete all four three-unit courses, total of 12 units for the certificate.

LEAD 200	Exercising Leadership	3
LEAD 210	Leadership and Inquiry	3
LEAD 255	Design Thinking	3
LEAD 256	Change in Complex Systems	3

Certificate in Strategic Consulting

Students are required to complete all four three-unit courses, total of 12 units for the certificate.

LEAD 215	Evaluation for Organizational Effectiveness	3
LEAD 221	Facilitation of Projects and Initiatives	3
LEAD 258	Organizational Consulting	3
LEAD 259	Organizational Learning	3

College of the Pacific

<http://www.pacific.edu/college/>
Phone: (209) 946-2141
Location: Wendell Phillips Center 110, 111
Rena Fraden, Dean
Gregg Jongeward, Senior Associate Dean
Marcia Hernandez, Associate Dean

Programs Offered

Master of Science in Biological Sciences

Master of Arts in Communication

- Communication Education
- Communication Studies
- Political Communication
- Media and Public Relations

Master of Arts in Psychology

Master of Arts in Health, Exercise and Sport Sciences

- Sport Pedagogy
- Sports Medicine
- Sport Management

Master of Science in Pharmaceutical and Chemical Sciences*

Doctor of Philosophy in Pharmaceutical and Chemical Sciences*

* For detailed program requirements for these degrees please consult the School of Pharmacy section in this catalogue.

The hallmark of all of our graduate programs in College of the Pacific is close personal interactions with dedicated faculty members who have a passion for teaching, research, and learning. For graduate students, this means discussion-based, personalized interactions with instructors in the classroom as well as opportunities to collaborate with faculty on original research projects and to co-author or co-present the results in professional venues. Graduate students in the College also have the opportunity to acquire additional training and apply their knowledge through internships in professional settings. Many also work with our undergraduates as teaching assistants, laboratory instructors, discussion leaders, and coaches. All graduates of our programs emerge "practice-ready," prepared for employment in their field, careers as teachers of their disciplines, or entry into advanced degree programs.

Biological Sciences Courses

BIOL 101. Genetics. 5 Units.

Emphasis of study is heritable variations and their relation to structure, behavior and function of genetic material. This basic course is for students concentrating on biological sciences, medical sciences and liberal arts. In addition to lecture, one-three hour laboratory per week is required. Prerequisites: BIOL 051 and BIOL 061. Recommended: Sophomore standing.

BIOL 111. Anatomy and Physiology. 4 Units.

This lecture and laboratory course covers the structure and function of the major physiological systems of the human body, and it is intended primarily for students in the Dental Hygiene program. Students taking BIOL 111 do not receive credit for either BIOL 071 or BIOL 081. Prerequisites: BIOL 051 and BIOL 061.

BIOL 122. Principles of Immunology. 4 Units.

The fundamental properties of antigens and antibodies are covered with an emphasis on the theories of antibody production, tolerance, transplantation immunity, autoimmunity and tumor immunology. Prerequisites: BIOL 101 and CHEM 121.

BIOL 124. Cancer Biology. 4 Units.

The course examines the morphological and molecular events that accompany the changes of a normal mammalian cell into a cancer cell, with an emphasis on the major pathways that affect cell growth and division, cell communication, cell death and metastasis. Prerequisite: BIOL 101.

BIOL 126. Neurobiology. 4 Units.

This course focuses on the molecular and cell biology of neuronal function and development, and how neurons work together to retrieve and process information and respond accordingly, with thorough discussions of sensory and motor systems and a brief review of more complex brain functions, such as emotions, speech and language, and memory. Prerequisites: BIOL 051 and BIOL 061.

BIOL 128. Histology. 4 Units.

A study of the tissues which comprise the organs of the body is the focus. This course is limited to human tissues. Thin sections of organs will be studied and their structure related to function. Credit only given once for BIOL 128 or BIOL 129. Prerequisites: BIOL 051 and BIOL 061.

BIOL 130. Plant Kingdom. 4 Units.

Through lectures, laboratories and field trips, students are introduced to the morphology, reproduction biology and environmental requirements of all major groups of plants. Included are material bearing on the evolutionary relationships within and between each major group. Individual projects are required. Prerequisites: BIOL 051 and BIOL 061. (ENST)

BIOL 134. Comparative Physiology. 4 Units.

This course is a detailed review of organ function in diverse groups of organisms. Emphasis is on physiological adaptation to the environment. Prerequisites: BIOL 051 and BIOL 061.

BIOL 145. Microbiology. 5 Units.

The biology of microorganisms is studied with emphasis on viruses, bacteria, fungi and protozoa. In addition to lecture, one three-hour laboratory per week is required. Prerequisites: BIOL 051, BIOL 061; CHEM 025, CHEM 027.

BIOL 146. Industrial Microbiology. 4 Units.

An in-depth knowledge of the industrial applications of microorganisms. The course uses an understanding of microbial physiology and genetics to illustrate how these organisms are utilized to create commercial products ranging from medicines to food products. Prerequisite: BIOL 145.

BIOL 147. Medical Microbiology. 4 Units.

Medical microbiology covers a survey of microorganisms implicated in human disease; emphasis on characteristics and properties of microorganisms, chiefly bacteria and fungi which are responsible for pathogenesis. Laboratory includes methods of isolation, characterization, and identification of bacteria and fungi responsible for human disease. Prerequisites: BIOL 145 and CHEM 121 with a C- or higher or permission of instructor.

BIOL 148. Emerging Infectious Diseases. 4 Units.

This class focuses on the evolutionary and ecological principles driving new infectious diseases of humans, wildlife, and domesticated animals. Through the exploration and application of real cases worldwide, students will have an understanding of how diseases emergence and present threats to global health. Research projects, writing assignments, case studies, and other activities will help students to synthesize a stronger appreciation for this aspect of health. Prerequisites: BIOL 051 and BIOL 061.

BIOL 151. Parasitology. 4 Units.

Principles of parasitism as well as biology of animal parasites with special emphasis on the protozoa, platyhelminths, nematodes, acanthocephala and arthropods are studied. Techniques of recovery of parasites from various vertebrate hosts are introduced including staining, mounting and identification. Prerequisites: BIOL 051, BIOL 061, BIOL 101. (ENST)

BIOL 152. Human Parasitic Diseases. 4 Units.

This class focuses on parasitic diseases of humans, wildlife, and domesticated animals. Through the exploration and application of real cases worldwide, students will have an understanding of how parasitic diseases emergence and present threats to global health. Midterm exams which focus on research projects and writing will help students to synthesize a stronger appreciation for these kinds of infectious diseases. Students will also engage in many discussions online as a method of improving their analytical and critical thinking, argumentative writing, and collaborative skills. Prerequisites: BIOL 051 and BIOL 061.

BIOL 153. Cell Biology. 4 Units.

Cell Biology studies cell structure and function with emphasis on the dynamic nature of the cellular environment and the methodologies of cell biology. The experimental basis of our present understanding of the cell is also stressed. Prerequisites: BIOL 051, BIOL 061, BIOL 101, CHEM 025 and CHEM 027. Recommended: Organic chemistry.

BIOL 155. Biological Electron Microscopy. 4 Units.

The process and techniques involved in examining biological specimens with the transmission electron microscope will be covered in detail. When competence in specimen processing is achieved, each student performs an original experiment as a term project. Prerequisites: BIOL 051, BIOL 061, CHEM 025, CHEM 027. Recommended: BIOL 101.

BIOL 157. Topics in Biomedical Research. 4 Units.

Basic research in the areas of cell biology, biochemistry, molecular biology and physiology are examined in their applications to current problems in medicine. Topics covered include genetic engineering, gene therapy, transplants and cloning. Prerequisites: BIOL 051, BIOL 061, BIOL 101; CHEM 121.

BIOL 159. Molecular Biological Techniques. 4 Units.

This advanced laboratory course in the methods of molecular biology, has an emphasis on modern techniques and their application in the laboratory. Topics covered include gene cloning, protein expression systems, nucleic acid isolation and purification, and basic methods of bioinformatics. Prerequisites: BIOL 101 and CHEM 121 with a "C-" or higher.

BIOL 160. Proteomics. 4 Units.

This course introduces students to the fundamental principles of mass spectrometry and its applications to investigate macromolecules, with an emphasis on proteins. The use of mass spectrometry, specifically in the area of proteomics, is an emerging, powerful technology that is rapidly becoming an essential tool for scientists to study biological systems and the function of proteins. Prerequisites: Grade of C or better in BIOL 061.

BIOL 162. Comparative Vertebrate Anatomy. 5 Units.

The evolution of vertebrate organ systems as revealed by comparative morphology are emphasized. Prerequisites: BIOL 051 and BIOL 061. Recommended: BIOL 101.

BIOL 165. Embryology and Development. 4 Units.

This laboratory course focuses on the events that occur as a single-celled embryo develops into an adult organism. Developmental processes are studied at the descriptive and mechanistic levels, leading to an understanding of how and why complex structures are produced. Major emphases is placed on animal embryology (both vertebrate and invertebrate) leading to the production to tissues, organs and organ systems. Later developmental processes also are studied, as well as sex determination. Additional topics include cancer and evolution as seen in the context of development. Prerequisites: BIOL 051, BIOL 061, BIOL 101.

BIOL 167. Evolution and Developmental Biology. 4 Units.

How do butterfly wings get their spots and stripes? Why do dolphins and humans have the same bones in their limbs? How did Darwin's finches quickly evolve so many different beak shapes? These are all questions that require an understanding of Evolutionary Developmental Biology (EvoDevo) to answer. EvoDevo explores the intersection of Evolution, Developmental Biology, and Genetics. This course covers introductory topics in those three fields, theoretical underpinnings of EvoDevo, as well as case studies. This course uses phylogenetic and developmental genetics frameworks to examine topics that include body-plans and patterning, genetic and morphological complexity, and novel features. Prerequisites: BIOL 51 and BIOL 61 or permission of instructor.

BIOL 168. Pharmacology. 4 Units.

Pharmacology is a complex field focusing on the mechanism of action of drugs. This course provides background information on the basic mechanisms of drug absorption, distribution and interaction with targets. In addition, this course covers how drugs are discovered and regulated. Finally, a selected set of drug families focusing on the nervous system and anti-cancer treatments are examined. This course is intended as a primer for later study of pharmacology covering many more drug families. Other courses such as Organic Chemistry, Physiology and Genetics are helpful but are not required. Prerequisites: BIOL 051, BIOL 061, CHEM 025, CHEM 027.

BIOL 169. Elements of Biochemistry. 4 Units.

The field of biochemistry is the focus in this non-lab course that is designed as a preparation for students who will attend a Pharmacy or Dental School. Topics include nucleic acid and protein structure and synthesis, intermediary metabolism, enzyme action, and synthesis and degradation of important biological molecules. The relationship of biochemistry, nutrition, and human disease is discussed. This course does not count for the Biochemistry major. Prerequisites: BIOL 051, BIOL 061, BIOL 101, CHEM 123 with a "C-" or higher.

BIOL 170. Human Anatomy. 5 Units.

This course is a study of the structure of the organ systems of humans. In addition to lecture, one three-hour laboratory per week is required. Credit will not be given if a student has taken BIOL 111. Prerequisites: BIOL 051 and BIOL 061.

BIOL 171. Methods in Field Biology. 4 Units.

A course focused on methods of biological investigation with emphasis on modern field sampling techniques and instrumentation. Students are trained in experimental design and quantitative data analysis used to address a range of biological questions. Prerequisites: BIOL 051 and BIOL 061 with a "D" or better. (ENST)

BIOL 175. Ecology. 5 Units.

The structure and dynamics of populations, biotic communities and ecosystems, is emphasized with particular focus upon relationships of organisms to their environments. Prerequisites: BIOL 051 and BIOL 061. (ENST)

BIOL 176. Ecology and Conservation Biology. 4 Units.

The principles of ecology are introduced with attention to consider threats and disruptions to ecological systems from the level of local populations through ecosystems, landscapes, and global processes. Ecological principles are used to help understand these systems, to make predictions for the future or for other systems, and to evaluate possible solutions. The class considers the importance of economic and demographic forces in causing conservation problems and in shaping conservation strategies, and students practice planning conservation areas. Prerequisite: BIOL 051. (ENST)

BIOL 177. Natural Medicines. 4 Units.

A lab course that surveys drugs found in nature, in particular their history, uses, and mode of action, and is designed as a preparation for students who will attend a Pharmacy or Dental School. Topics include history of medicine, survey of natural compounds relevant to pharmacology, and survey of naturally-derived drugs used to treat cancer, heart disease, and neurological disorders. Prerequisites: BIOL 051, BIOL 061, BIOL 101, CHEM 123 with a "C-" or higher.

BIOL 179. Evolution. 4 Units.

Lectures and readings on the mechanisms of evolutionary change in organisms are the focus. Prerequisites: BIOL 051 and BIOL 061. Recommended: BIOL 101.

BIOL 180. Human Physiology. 5 Units.

This course is a lecture- and laboratory-based review of the functions of the major organ systems of vertebrates with emphasis on the human body. Lab exercises demonstrate basic physiological processes in the human body and emphasize techniques of instrumental data acquisition and data presentation. Credit will not be given if a student has taken BIOL 111. Prerequisites: BIOL 061 and (CHEM 023 or CHEM 024 or CHEM 025 or CHEM 027). Recommended: one semester of genetics.

BIOL 182. Medical Endocrinology. 4 Units.

This lecture/lab course presents the fundamentals and current topics in human endocrinology from a medical and clinical perspective. Lectures cover normal endocrine physiology, endocrine diseases, diagnostic rubrics for patient assessment/disease evaluation, and current treatment recommendations. Lab is divided into two units: (1) Histology of healthy endocrine glands and histopathology of diseased endocrine glands; and (2) Developing patient assessment/diagnosis skills using computer "virtual patients." Prerequisites: BIOL 051, BIOL 061, CHEM 025 and CHEM 027. Recommended: BIOL 71 or 81 or BIOL 128.

BIOL 183. Comparative Oral+ENT Biology. 4 Units.

This course is a hands-on introduction to the mouth, ears, nose and throat of vertebrates. It provides a comparative view of the evolution, design and function of the mouth and associated cavities. Mastication, swallowing, speech and hearing are examined from various perspectives. Common clinical issues in humans, as well as species with extreme performances are also discussed. Labs include practical training in technical sculpture, casting, dissection, drilling, adhesives, wire work, anesthesia, and experiments on speech and hearing. The target audience is students interested in dentistry, otorhinolaryngology, audiology, speech pathology or organismal biology. Prerequisites: BIOL 051 and BIOL 061.

BIOL 185. Comparative Animal Behavior. 4 Units.

The ecology and evolution of animal behavior are discussed. Laboratory involves a quantitative study of animal behavior at Micke Grove Zoo. Prerequisites: BIOL 051 and BIOL 061. Junior standing in Biological Sciences or Psychology.

BIOL 186. Hormones and Behavior. 4 Units.

An on-line reading/discussion/writing course focusing on the bidirectional interactions between an animal's behaviors and its endocrine system. Topics include: overview of the vertebrate endocrine system, biological sex and gender issues, courtship and sex behaviors, parenting behavior, pheromonal communication, aggression and other social behaviors, learning and memory, hunger, stress, and biological rhythms. Discussions also analyze current research publications, research methodologies, and results. Students practice scientific writing and prepare a 10-12 page research paper. This course counts as an upper division elective in the Biology major and as an elective in the Gender Studies degree. Prerequisites: BIOL 051 and BIOL 061. (GEND)

BIOL 191. Independent Study. 2-4 Units.**BIOL 194. Science Communication. 4 Units.**

This course provides students the opportunity to improve their skills at assessment of primary scientific literature, oral presentation of scientific research, and scientific writing. Students critically analyze a series of journal articles related to their own research, perform several writing exercises, orally present preliminary results of their research or research prospectus, write a research proposal, and evaluate peers' oral and written communication efforts. Additionally, students attend and participate in departmental seminar presentations given by researchers from Pacific and other universities. Prerequisites: Instructor permission.

BIOL 197. Undergraduate Research. 1-4 Units.**BIOL 222. Immunology. 4 Units.**

Students study immunoglobulin structure, function, and expression in animals. Molecular and cellular mechanisms of humoral immune response, cell-mediated immunity, complement system, autoimmune diseases, tolerance induction, transplantations, cancer immunity, vaccines, and cytokine actions are also emphasized. Graduate standing.

BIOL 224. Cancer Biology. 4 Units.

The course examines the morphological and molecular events that accompany the change of a normal mammalian cell into a cancer cell, with an emphasis on the major pathways that affect cell growth and division, cell communication, cell death and metastasis.

BIOL 226. Neurobiology. 4 Units.

The course focuses on the molecular and cell biology of neuronal function and development, and how neurons work together to retrieve and process information and respond accordingly. It involves thorough discussions of sensory and motor systems and a brief review of more complex brain functions, such as emotions, speech and language, and memory.

BIOL 234. Comparative Physiology. 4 Units.

This course offers a detailed review of organ function in diverse groups of organisms. Emphasis is on physiological adaptation to the environment. Graduate standing.

BIOL 244. Developmental Biology. 4 Units.

Students examine the genetic control of development and the physiological mechanisms involved in fertilization and differentiation. Graduate standing.

BIOL 246. Industrial Microbiology. 4 Units.

An in-depth knowledge of the industrial applications of microorganisms. The course uses an understanding of microbial physiology and genetics to illustrate how these organisms are utilized to create commercial products ranging from medicines to food products. Prerequisite: BIOL 145.

BIOL 247. Medical Microbiology. 4 Units.

This course content is the same as BIOL 147 with three additional hours per week of seminar and/or special project. Graduate standing.

BIOL 251. Parasitology. 4 Units.

This course content is the same as BIOL 151. Principles of parasitism, biology of animal parasites with special emphasis on the protozoa, nematodes, helminths, acanthocephala, and arthropods are covered with three additional hours per week of seminar and/or special project. Graduate standing.

BIOL 253. Cell Biology. 4 Units.

This course content is the same as BIOL 153. Students take an in-depth look at the structure and function of a cell with an emphasis on the methodologies of Cell Biology. Research-based current understanding of the topics is stressed and a special project is required. Graduate standing.

BIOL 255. Biological Electron Microscopy. 4 Units.

This course content is the same as BIOL 155. The processes and techniques involved in examining biological specimens with the transmission electron microscope are covered in detail. When competence in specimen processing is achieved, each student performs an original experiment as a term project. Graduate standing.

BIOL 259. Molecular Biological Techniques. 4 Units.

This is an advanced laboratory course in the methods of molecular biology, with emphasis on modern techniques and their application in the laboratory. Topics covered include gene cloning, protein expression systems, nucleic acid isolation and purification, and basic methods of bioinformatics. Graduate standing.

BIOL 260. Proteomics. 4 Units.

This course introduces students to the fundamental principles of mass spectrometry and its applications to investigate macromolecules, with an emphasis on proteins. The use of mass spectrometry, specifically in the area of proteomics, is an emerging, powerful technology that is rapidly becoming an essential tool for scientists to study biological systems and the function of proteins. Prerequisites: Graduate standing.

BIOL 267. Evolution and Developmental Biology. 4 Units.

How do butterfly wings get their spots and stripes? Why do dolphins and humans have the same bones in their limbs? How did Darwin's finches quickly evolve so many different beak shapes? These are all questions that require an understanding of Evolutionary Developmental Biology (EvoDevo) to answer. EvoDevo explores the intersection of Evolution, Developmental Biology, and Genetics. This course covers introductory topics in those three fields, theoretical underpinnings of EvoDevo, as well as case studies. This course uses phylogenetic and developmental genetics frameworks to examine topics that include body-plans and patterning, genetic and morphological complexity, and novel features. Prerequisites: Graduate standing.

BIOL 268. Pharmacology. 4 Units.

Pharmacology is a complex field focusing on the mechanism of action of drugs. This course provides background information on the basic mechanisms of drug absorption, distribution and interaction with targets. In addition, this course covers how drugs are discovered and regulated. Finally, a selected set of drug families focusing on the nervous system and anti-cancer treatments are examined. This course is intended as a primer for later study of pharmacology covering many more drug families. Prerequisites: Graduate standing.

BIOL 271. Methods in Field Biology. 4 Units.

This is a course focused on methods of biological investigation with emphasis on modern field sampling techniques and instrumentation. Students are trained in experimental design and quantitative data analysis used to address a range of biological questions. Graduate standing.

BIOL 274. Biology of Insects. 4 Units.

A lecture and laboratory introduce a broad study of the structure and function of insects, the most diverse terrestrial organisms with over 1 million described species. The course includes a study of their anatomy, physiology, ecology, evolution, reproduction, behavior, and relation to humans. The laboratory work includes field trips in addition to the preparation of 50 classified insects. Project assignments include but are not limited to identification of taxa of interest, and analysis of insect data related to student interests.

BIOL 279. Evolution. 4 Units.

This course content is the same as BIOL 179 and a special project is required. Graduate standing.

BIOL 282. Medical Endocrinology. 4 Units.

This lecture/lab course presents the fundamentals and current topics in human endocrinology from a medical and clinical perspective. Lectures cover normal endocrine physiology, endocrine diseases, diagnostic rubrics for patient assessment/disease evaluation, and current treatment recommendations. Lab is divided into two units: (1) histology of healthy endocrine glands and histopathology of diseased endocrine glands; and (2) developing patient assessment/diagnosis skills using computer "virtual patients." Prerequisites: Graduate Standing.

BIOL 283. Comparative Oral+ENT Biology. 4 Units.

This course is a hands-on introduction to the mouth, ears, nose and throat of vertebrates. It provides a comparative view of the evolution, design and function of the mouth and associated cavities. Mastication, swallowing, speech and hearing are examined from various perspectives. Common clinical issues in humans, as well as species with extreme performances are also discussed. Labs include practical training in technical sculpture, casting, dissection, drilling, adhesives, wire work, anesthesia, and experiments on speech and hearing. The target audience is students interested in dentistry, otorhinolaryngology, audiology, speech pathology or organismal biology. Prerequisites: Graduate standing.

BIOL 291. Independent Study. 2 or 4 Units.**BIOL 294. Science Communication. 4 Units.**

This course provides students the opportunity to improve their skills at assessment of primary scientific literature, oral presentation of scientific research, and scientific writing. Students critically analyze a series of journal articles related to their own thesis research, perform several writing exercises, orally present preliminary results of their thesis research or thesis prospectus, write a thesis research proposal, and evaluate peers' oral and written communication efforts. Students also form and meet with their graduate thesis committee to discuss thesis research. Additionally, students attend and participate in departmental seminar presentations given by researchers from Pacific and other universities. Prerequisites: Open to first-year graduate students.

BIOL 295. Graduate Seminar. 4 Units.**BIOL 297. Graduate Research. 1-6 Units.****BIOL 299. Thesis. 2 or 4 Units.**

Communication Courses

COMM 114. Argumentation and Advocacy. 4 Units.

Students are introduced to the theory and practice of argumentation, which is a method of decision-making emphasizing reason giving and evidence. The course includes instruction in debating, research, and critical writing, as well as advanced topics in the study of public deliberation. Prerequisites: COMM 027 or COMM 031 or COMM 043 or COMM 050, with a grade of C or higher. (PLAW)

COMM 116. Rhetorical Theory and Criticism. 4 Units.

The focus of this class is to help students derive insight into how symbolic processes affect human awareness, beliefs, values, and actions. The course treats criticism and analysis as methods of inquiry into the nature, character, and effects of human communication. It addresses various methods of rhetorical criticism in terms of their central units of analysis and typical intellectual concerns. Prerequisite: COMM 160 or permission of the instructor.

COMM 117. Public Advocacy. 4 Units.

This course teaches the principles of persuasion in public contexts in the U.S. (types and characteristics of public audiences, official and unofficial advocacy campaigns, and media framing of public issues) from historical and theoretical perspectives. The focus is to make students aware of the constraints and opportunities in public advocacy arguments and their public dissemination. (ENST, GE1A)

COMM 131. Media Production and Digital Culture. 4 Units.

Students learn how to use industry-standard production equipment, software, and facilities to produce audio podcasts and video projects while developing a practical and theoretical understanding of the basic fundamentals of lighting, sound, camera work, broadcasting, and audio/video editing. The focus is on producing original content ready for inclusion in students' portfolios using foundational methods that emphasize production quality and critical understanding of the production process. Lab Fee required. (FILM)

COMM 132. Writing for Media. 4 Units.

This course approaches media writing as a social process and practice that occurs across mediated platforms. These approaches include digital, political, economic, and professional conditions that enable or constrain writing and the writer. Exploration and practice of media writing processes include: research, preparation, and delivery. Students develop competence in script writing for news, commentary, fictional genres, social media, and emerging media. A lab fee is required.

COMM 133. Documentary Film as Persuasive Communication. 4 Units.

This course is a survey of documentary film beginning at the turn of the century and continuing through contemporary productions from a historical and rhetorical perspective. Students explore documentary film's origins and trace out its development in relation to its use and reception as students become familiar with the history of the documentary, the evolution of the genre, its rhetorical construction and its cultural influences. (DVSY, ETHC, FILM)

COMM 134. Documentary Film Production. 4 Units.

This course is a field video production course in documentary production. Through a series of assignments, lectures and screening students learn the basics of video production for documentary style productions. This includes research, management, pre-production, production and post-production processes. Students work primarily within groups to produce documentary projects using digital production equipment and techniques. There are no prerequisites for this course. (FILM)

COMM 135. Principles of Public Relations. 4 Units.

In this course students learn about media platforms and their application in contemporary media and business. The focus is on content creation and how to build content that performs well in social media, including a focus on social analytics, social media campaigns, and other contemporary public relations practices. Students engage in analysis and critique of various public relations practices in historical and contemporary moments.

COMM 137. Public Relations Case Studies. 4 Units.

In this course students learn theoretical and practical approaches to the analysis and delivery of public relations campaigns. Students explore and practice public relations processes including: research, preparation, content creation, media writing, delivery methods, and analytics for specific clients.

COMM 139. Theory of Mass Communication. 4 Units.

An overview of major theories and research in mass communication is presented. Application of theories that explain and predict communication effects of political campaigns, advertising, entertainment, and information are discussed. Theoretical areas that are covered include socialization, information, diffusion, advertising, persuasion, and uses and gratification's research in addition to the discussion of the state, function, and form of theory in mass communication. Prerequisite: COMM 160 or permission of instructor.

COMM 140. Writing for Public Relations. 4 Units.

Theory and practice in public relations writing in the context of publicity are emphasized. Students learn the write news releases, backgrounds, business letters and feature stories. Prerequisite: COMM 135.

COMM 142. Strategic Communication: Brand Management & Integrated Marketing. 4 Units.

Every day, we engage with countless brands and organizations through a variety of channels – whether we want to or not. The rapid ascent of digital media has fundamentally altered our experiences with these organizations and radically changed the landscape for the umbrella of terms (advertising, marketing, promotion, public relations, etc.) that encompass brand management. Brand Management is part of a social communication process that has evolved over time with changes in culture, technology, business strategies, and constantly converging media. This course is designed to introduce students to brand management strategies and practices through strategic communication theory and experiential applications vital to success in advertising, marketing, and public relations. The course's overriding objective is to help students develop a knowledge base of strategic communication and brand management from a pluralistic viewpoint. As a survey course, it addresses a wide range of organizations and brands including: Burger King, Lego, Lynx, Maserati, HSBC, and Popeye's. Prerequisites: COMM 31.

COMM 143. Intercultural Communication. 4 Units.

This course analyzes the major variables affecting communication between persons of different cultural backgrounds, explores essential intercultural communication theories that allow access to explanations and descriptions of cultural norms and values, and identifies guidelines for achieving intercultural communication competence. This course fulfills the diversity requirement. (DVSY, ETHC, GE1C)

COMM 145. Human Communication Theory. 4 Units.

Contemporary understandings of human interaction are studied beginning with epistemological issues as a framework. The course examines theory building, foundation theories of our discipline, and contextual theories.

COMM 147. Nonverbal Communication. 4 Units.

Major dimensions of nonverbal behavior exhibited by human beings in social interactional contexts are examined with special emphasis given to such areas as human proxemics, kinesics, vocalics, haptics, and artifactual codes. Prerequisite: COMM 043 or permission of instructor.

COMM 149. Introduction to Organizational Communication. 4 Units.

Students are introduced to both a theoretical and an applied approach to the role of communication in various aspects of organizational functioning, such as motivation, leadership, decision-making, conflict management, message management, etc. Prerequisites: COMM 027 and COMM 043 or permission of instructor.

COMM 150. Capstone in Communication. 4 Units.

This senior level capstone seminar is devoted to expanding and applying the communication concepts that students have learned in the communication major to contemporary communication issues. Students undertake research projects and employ a variety of communication methodologies, including surveys, focus groups, content analysis, media productions, in order to study the social, historical and communicative implications of their chosen area of interest. This course is designed to offer Communication majors the opportunity to incorporate the content from their Communication theory and practice courses into their final papers and projects. This course is required for Communication majors. Prerequisites: Senior standing.

COMM 155. Persuasion. 4 Units.

This course is a survey of social psychological and communication approaches to social influence. Both past and contemporary theorizing is explored, and the methods of empirical research is discussed. Prerequisite: COMM 027 or permission of the instructor.

COMM 156. Public Relations Campaigns. 4 Units.

Building on the skills acquired in previous public relations courses, this course is designed to help students continue to develop and refine their critical and creative thinking in an applied context. Students will research, plan, and design public relations strategies and tactics in the development of a public relations campaign for a real-world client. Prerequisite: COMM 135.

COMM 160. Communication Research Methods. 4 Units.

This course is a study of research methods appropriate for examining communication-related problems. Topics for the course include historical-critical methods, descriptive methods, experimental methods, statistical models for data analysis and research reporting and writing. Prerequisites: COMM 027, COMM 031, COMM 043 with a "C-" or better.

COMM 161. Professions and Professionalism. 2 Units.

This senior capstone course helps students review and reflect on their studies in Communication with an eye toward transitioning onward to their next steps toward employment or graduate school. The primary focus of the course lies in sharpening students' understanding of how Communication theories and concepts can be applied to particular problems across a wide range of communication environments. Students will be able to talk and write about what they have learned in Communication in a clear and informed way to a variety of audiences including potential employers, co-workers, colleagues, and their audiences. This course is required for Communication majors. Prerequisites: Senior standing.

COMM 187. Internship. 2-4 Units.

Experiences in a work setting, are contracted on an individual basis. Internships are awarded on a competitive basis and are limited to the number of placements available. COMM 187 represents advanced internship work involving increased independence and responsibility; a corresponding COMM 087 course or equivalent is a prerequisite. Students may not accumulate for credit more than eight units in any specific internship (a total of four in a COMM 087 course and a total of four in a COMM 187 course). Graded Pass/No credit.

COMM 189. Practicum. 1-4 Units.

This course is non-classroom experience in activities related to the curriculum under conditions that the appropriate faculty member determines. Students register for one of the courses listed below. Courses numbered 189 are similar contexts with a more advanced level of performance and learning expectations compared to courses numbered 089. Note: A student may not accumulate for credit more than eight units in any specific practicum. A total of four in a COMM 089 course and a total of four in a COMM 189 course). Prerequisite: COMM 089.

COMM 189A. Advanced Print Practicum. 1-4 Units.**COMM 189B. Advanced Broadcast Practicum. 1-4 Units.****COMM 189C. Advanced Public Relations Practicum. 1-4 Units.****COMM 189D. Advanced Speech and Debate Practicum. 1-4 Units.****COMM 191. Independent Study. 2-4 Units.****COMM 197. Independent Research. 2-4 Units.****COMM 198B. Broadcast Practicum. 2-4 Units.****COMM 200. Communication and Consulting. 3 Units.**

This course explores topics related to the work of communication consultants. Through the course readings, presentations, workshops and other assigned work, students will acquire an understanding of the consulting process, including the role of the consultant, methods for undertaking a needs assessment, strategies for conducting training programs, and techniques for evaluating the work of consultants.

COMM 201. Applied Public Relations. 3 Units.

this course examines public relations strategies and tactics, as applicable to politics, non-profits and education. It will explore public affairs, public outreach and crisis management, and prepare students to communicate and utilize public relations with internal and external audiences.

COMM 202. Public Communication Campaigns. 3 Units.

The course is designed to provide a comprehensive overview of communication theory as it relates to attitudes and behavior changes involving public communication campaign issues. The course will also develop an understanding of the application of various quantitative and qualitative research methods to the design, execution, and evaluation of public communication campaigns.

COMM 203. New Communication Technology. 3 Units.

The course is designed to provide a comprehensive overview of a range of new communication technology and to give students basic skills and theoretical principles for their application to public communication through presentations, readings, videos placed on iTunes University and exercises. In addition, the course will enable students to identify, internalize and practice the necessary components of using new media technology for effective public communication.

COMM 204. Media Relations: New Media World. 3 Units.

The purpose of this course is to discuss and debate media relations principles and practices in relation to government, corporations, and public policy. From a scholarly examination of this unique and important form of communication, the course will survey the current trends and issues, and determine the validity of existing theories of media relations management from government, corporate, and community perspectives.

COMM 205. Communication Decision Making. 3 Units.

The purpose of this course is to assess communication strategies in decision making. From a scholarly examination of communication theories and decision making stages, the course will focus on the significance of communicating, administering, and evaluating decision making in professional environments.

COMM 206. Management of Organizational Communication. 3 Units.

This course examines both theoretical and applied approaches concerning the role of communication in various aspects of organizational function, such as motivation, leadership, decision-making, conflict management, and message management.

COMM 207. Advanced Professional Communication. 3 Units.

This advanced course both builds on basic oral and written professional communication skills, and goes well beyond them. The goals of this course are to provide opportunities for students to polish communication skills in different contexts, and to provide practice in and feedback on the interactive communication skills essential to successful professionals.

COMM 214. Argumentation and Advocacy. 4 Units.

This course introduces students to the theory and practice of argumentation, that is a method of decision-making that emphasizes reason giving evidence. The course includes instruction in debating, research, and critical writing, as well as advanced topics in the study of public deliberation. Prerequisites: three courses from COMM 027, 031, 043, 050 with a GPA of 2.5 or better, or permission of the instructor.

COMM 216. Rhetorical Theory and Criticism. 4 Units.

This course strives to help students derive insight into how symbolic processes affect human awareness, beliefs, values, and actions. The course treats criticism and analysis as methods of inquiry into the nature, character, and effects of human communication. It addresses various methods of rhetorical criticism in terms of their central units of analysis and typical intellectual concerns. Prerequisite: COMM 160 or permission of the instructor.

COMM 233. Documentary Film as Persuasive Communication. 4 Units.

This course is a survey of documentary film beginning at the turn of the century and continuing through contemporary productions from a historical and rhetorical perspective. Students explore documentary film's origins and trace out its development in relation to its use and reception as students become familiar with the history of the documentary, the evolution of the genre, its rhetorical construction and its cultural influences.

COMM 237. PR Case Studies and Problems. 4 Units.

This advanced course in public relations engages students in case study research and application of public relations principles. Written and oral presentations with adherence to professional standards of excellence are required. Prerequisite: COMM 135.

COMM 239. Theory of Mass Communication. 4 Units.

This course is an overview of major theories and research in mass communication. Students examine the application of theories that explain and predict communication effects of political campaigns, advertising, entertainment, and information. Theoretical areas covered include socialization, information, diffusion, advertising, persuasion, and uses of gratification's research. The state, function, and form of theory in mass communication is discussed. Prerequisite: COMM 160 or permission of the instructor.

COMM 245. Human Communication Theory. 4 Units.

Students study contemporary understandings of human interaction. Beginning with epistemological issues as a framework, the course examines theory building, foundation theories of our discipline, and contextual theories.

COMM 247. Nonverbal Communication. 4 Units.

The course examines major dimensions of non-verbal behavior exhibited by human beings in social interactional contexts. Special emphasis is given to such areas as human proxemics, kinesics, vocalics, haptics, and artifactual codes. Prerequisite: COMM 043 or permission of the instructor.

COMM 249. Introduction to Organizational Communication. 4 Units.

This course takes both a theoretical and an applied approach to introduce the student to the role of communication in various aspects of organizational functioning, such as motivation, leadership, decision-making, conflict management, message management, etc. Prerequisites: COMM 043 and COMM 027 or permission of the instructor.

COMM 255. Persuasion. 4 Units.

This course is a survey of social psychological and communication approaches to social influence. Both past and contemporary theorizing are explored, and the methods of empirical research is discussed. Prerequisite: COMM 027 or permission of the instructor.

COMM 256. Public Relations Campaigns. 4 Units.

Building on the skills acquired in previous public relations courses, this course is designed to help students continue to develop and refine their critical and creative thinking in an applied context. Students will research, plan, and design public relations strategies and tactics in the development of a public relations campaign for a real-world client.

COMM 260. Communication Research Methods. 4 Units.

Students study of research methods appropriate for examining communication-related problems. Topics for the course include historical-critical methods, descriptive methods, experimental methods, statistical models for data analysis and research reporting and writing. A minimum GPA of 2.5 is required. Prerequisites: COMM 027, 031, 043, or permission of the instructor. Recommended for sophomores.

COMM 261. Critical and Qualitative Research Methods. 4 Units.

The course provides a graduate-level introduction to qualitative methods used in communication studies. Topics covered provide an overview of rhetorical analysis, critical and cultural studies, ethnography, and case studies in public relations. The course emphasizes the connection between the theoretical foundations of qualitative inquiry and their applications to communicative interactions. Applications include the writing of criticism, field work in ethnography, and case studies.

COMM 262. Quantitative Research Methods. 4 Units.

This course develops expertise in undertaking quantitative research at the graduate level. The seminar focuses on various quantitative methods, that include content analysis, survey research, experimental design, and scale construction, as well as statistical techniques for analyzing quantitative data.

COMM 271. Graduate Seminar: Rhetorical Thought. 4 Units.

This course provides a graduate level introduction into the theory and practice of rhetorical criticism. The course focuses on the role of the critic and six modes of criticism which are as follows: generic criticism, cluster, narrative criticism, narrative criticism, ideological criticism, metaphoric criticism, and fantasy theme criticism.

COMM 272. Graduate Seminar: Interpersonal Communication. 4 Units.

This course provides the student who has achieved a general understanding of interpersonal communication issues the opportunity to choose and explore a particular area of special interest. The first phase of the course focuses on discussion of several theories of interpersonal behavior. Beginning approximately the fourth week of class, each student brings in and presents two or more abstracts of published articles related to the interest area. The last session(s) provides the opportunity for students to share their conclusions with the others. Each student completes a paper which presents a research proposal in the area of interest. The term paper is due the last scheduled day of classes.

COMM 273. Graduate Seminar: Mass Communication. 4 Units.

The purpose of this course is to provide an introduction to mass communication theory and scholarship from three different scholarly perspectives: the social science or traditional paradigm, the critical theory paradigm, and the ethnographic paradigm. Students are not only exposed to the literature in each of these areas, but they are also asked to conduct small scale studies from two of the three paradigms. Because the class is a seminar, student presentations and discussion are the major activity during class time.

COMM 275. Graduate Seminar: in Public Relations. 4 Units.

The Graduate Seminar in Public Relations is designed through in-depth study and research to formalize understanding of Public Relations: theory and practice, functions in organizations and role in society. Students study concepts and theories related to public relations role in social systems. A "mock" APR tests knowledge at the end of the semester with both a written and an oral examination.

COMM 276. Communication in Learning Settings. 4 Units.

This graduate seminar is designed to develop knowledge of current communication education research and effective communication strategies for teaching undergraduate courses in communication.

COMM 277. Media Relations. 4 Units.

This course is to discuss and debate media relations, principles, and practice.

COMM 278. Political Communication. 4 Units.

This course is designed to provide a grounding in rhetorical approaches to persuasion in a political context, to acquaint students with the range of political ideologies, and to examine the theoretical and pragmatic opportunities and obstacles to advocacy in the current mediated content of national, regional, or local politics.

COMM 279. Visual Communication. 4 Units.

This course investigates the persuasive influence of decoding visual images, advertising, public relations, political campaigns, public memory, and popular culture. Historical and theoretical aspects of visual communication will be studied in this course. Critical analysis methods and ethical implications of electronic and print media images will be discussed.

COMM 287. Graduate Internship. 2 or 4 Units.**COMM 287A. Internship. 1-4 Units.****COMM 289. Graduate Practicum. 2 or 4 Units.****COMM 291. Graduate Independent Study. 1-4 Units.****COMM 295. Graduate Seminar. 4 Units.****COMM 297. Graduate Research. 1-4 Units.****COMM 298. Non-Traditional Thesis. 4 Units.**

After completing coursework and comprehensive examinations, students work in the Communication Graduate Program culminates with enrollment in COMM 298: Non-Traditional Thesis a three-part project that includes: a written Proposal for the non-traditional thesis, a written document that summarizes the non-traditional thesis, and a formal presentation and oral examination in which the student presents the completed work to his or her committee. The non-traditional thesis involves a study around an issue or challenge facing an organization or business with a media or public relations focus. It emphasizes both scholarly and practical application in line with the professional orientation of the Pacific Communication Department. The subject of the non-traditional thesis may be the student's employer. Students complete the non-traditional thesis under the direction of a full-time faculty member, who serves as chairperson of the student's non-traditional thesis committee. Two additional faculty members and/or industry professionals join the chairperson on the committee. A non-traditional thesis may take many forms, though all must be noteworthy for substance and artistic or professional quality. Non-traditional theses could include: documentary films and videos, slide programs, photo essays, feature or investigative article series, handbooks for professionals (e.g., the result of synthesizing and translating scholarly research), or magazine design and layout projects. The non-traditional thesis could be a well conceptualized magazine article series (for example, three 2,500-word stories) targeted to a specific publication. Such non-traditional theses must show both greater depth and breadth (conceptually, stylistically and in terms of quality of research) than any single assignment completed in a graduate level class. Prerequisites: Completion of 28 units and instructor permission.

COMM 299. Thesis. 2 or 4 Units.**COMM 391. Graduate Independent Study. 2-4 Units.****Hlth, Exercise Sprt Sci Courses****HESP 110. Health and Exercise Science Law. 4 Units.**

This course examines legal issues and responsibilities relevant to health and exercise science professionals. This course is divided into two parts. Part I introduces basic concepts of the legal system and reviews general legal principles of tort and contract law. Part II focuses upon specific topics to which legal principles and risk management strategies apply. This course is taught combining lecture, class discussions, and experientially based assignments designed to develop the ability to practically apply circumstance to the law and risk management planning. In-class oral arguments using relevant case law, review of local facilities and programs, and legal observations in San Joaquin County courtrooms will supplement course content and offer students "hands on" learning opportunities.

HESP 129. Exercise Physiology. 4 Units.

This course is designed to introduce Health and Exercise Science students to core physiological concepts relevant to acute and long-term adaptations to the stress of exercise. An overview of metabolic, cardiovascular, respiratory, and skeletal muscle adaptations will be discussed along with special topics such as environmental stressors, obesity, and nutrition. Outside laboratory assignments are carried out for the purpose of applying lecture to practice and providing "hands on" opportunities to develop basic competencies in the interpretation of laboratory testing in exercise physiology. Lab fee required.

HESP 131. Assessment and Evaluation. 4 Units.

This course is the development of competencies of Health, Exercise and Sport Sciences majors for the design and implementation of procedures to appropriately measure and evaluate students, clients and/or programs. Basic data acquisition methods and statistical analysis techniques are presented. A Lab fee is required.

HESP 133. Functional Anatomy. 4 Units.

This course is a functional study of musculoskeletal anatomy and its relationship to human movement, posture, exercise prescription, and rehabilitation. Prerequisite: BIOL 011 or BIOL 051 or BIOL 061 or permission of instructor, and lab fee required.

HESP 135. Nutrition and Metabolism. 4 Units.

This course provides a thorough study of the principles of nutrition as they relate to health of individuals who participate in sports or physical activity. Topics include calculating energy balance and the role of carbohydrates, lipid, protein, vitamins, minerals and water in sports performance. The application of these topics for optimal metabolic functioning to a variety of physical activities is also presented. Prerequisites: HESP 129; BIOL 011 or BIOL 061.

HESP 137. Psycho-Social Aspects of Health Care. 4 Units.

Students study comprehensive, integrated coverage of psychosocial topics in healthcare involving clients, families, and other caregivers affected by pathology, impairment, functional limitations, and/or disability. This course will have a broad coverage of topics in healthcare including multicultural issues, spirituality, chronic condition, abuse/neglect, and PTSD. Emphasis will be placed on current, evidence-based literature, connecting theory to practice.

HESP 143. Prevention and Acute Care of Injury and Illness. 4 Units.

This course provides an overview of the field of Athletic Training, its organization, and the responsibilities of a Certified Athletic Trainer (AT) as part of the sports medicine team. Instruction emphasizes prevention, recognition, and immediate care of injuries and illnesses associated with physical activity. This course is recommended for freshmen.

HESP 145. Therapeutic Modalities. 4 Units.

This course is a lecture and laboratory experience designed to expose the student to the theory, principles, techniques and application of therapeutic modalities pertaining to the treatment of athletic or activity related injuries. Topics include discussions of the physiological effects, indications, contra indications, dosage and maintenance of each modality. Recommended: BIOL 081. Lab fee is required. Junior standing.

HESP 146. Health, Disease, and Pharmacology. 4 Units.

This course is an in-depth exploration of physical, mental, and social health with specific emphasis on recognizing the signs, symptoms, and predisposing conditions associated with the progression of specific illnesses and diseases as they relate to the physically active individual. Students also develop an awareness of the indications, contraindications, precautions, and interactions of medications used to treat those illnesses and diseases.

HESP 147. Muscle Physiology. 4 Units.

This course is focused on skeletal muscle physiology. Topics include the structure and function of muscle tissue, protein synthesis, cell signaling cascades, the specificity of adaptation, enzymes and their roles in metabolism, endocrine function, anabolic steroids, muscle damage, inflammatory physiology, neuromuscular principles (e.g., size principle), and the mechanisms of muscle fatigue. Laboratory assignments focus on skeletal muscle testing and evaluation. Prerequisite: HESP 129 and upper-division class standing. Lab fee required.

HESP 148. Research in Health and Exercise Science. 4 Units.

The purpose of this course is to gather, analyze and publish findings in health and exercise science. It is a practical course that focuses on collection of scientific information, appropriate analyses of data, and formulating conclusions that fit or modify existing paradigms. Students must have completed training in research methods and statistics and be capable of effective review of scholarly literature. At the conclusion of the course students are expected to submit their findings for peer review and publication. Prerequisites: HESP 180.

HESP 149. Clinical Evaluation and Diagnosis I. 3 Units.

This course presents an in-depth study of musculoskeletal assessment of the lower extremity, thoracic and lumbar spine for the purpose of identifying (a) common acquired or congenital risk factors that would predispose an individual to injury and/or (b) musculoskeletal injury common to athletics or physical activity. Students receive instruction in obtaining a medical history, performing a visual observation, palpating bones and soft tissues, and performing appropriate special tests for injuries and conditions of the foot, ankle, lower leg, knee, thigh, hip, pelvis, lumbar and thoracic spine. This course is directed toward students who pursue athletic training and/or physical therapy professions. Prerequisite: HESP 133 or BIOL 071, and a lab fee is required.

HESP 150. Clinical Evaluation and Diagnosis II. 3 Units.

This course presents an in-depth study of musculoskeletal assessment of the upper extremity, cervical spine, head and face for the purpose of identifying (a) common acquired or congenital risk factors that would predispose an individual to injury and/or (b) musculoskeletal injury common to athletics or physical activity. Students receive instruction in obtaining a medical history, performing a visual observation, palpating bones and soft tissues, and performing appropriate special tests for injuries and conditions of the shoulder, upper arm, elbow, forearm, wrist, hand, fingers, thumb, cervical spine, head, and face. This course is directed toward students who pursue athletic training and/or physical therapy professions. Prerequisites: HESP 149; HESP 133 or BIOL 071. Lab fee is required.

HESP 151. Elementary Physical Education. 3 Units.

This course is designed to prepare students for employment in an elementary school setting and provide them with the tools necessary to formulate and implement a comprehensive elementary PE experience for all students. Participants learn a wide range of teaching skills that facilitate the ability to create a quality active learning environment in elementary PE. Students explore effective teaching and assessment strategies, classroom management skills, the use of constructive feedback, the negotiation of diverse classrooms and the development of appropriate student learning outcomes. Students also are introduced to the subject matter of elementary PE and will undertake several teaching episodes. This course encourages students to engage in reflexive teaching practices, develop physically educated young people, maximize student involvement and enjoyment in PE and integrate core curriculum subject matter into PE lessons.

HESP 154. Stress Physiology. 4 Units.

In this course you will examine what stress is and how your body tolerates, adapts, and allows you to flourish with stresses.

HESP 155. Motor Development and Learning. 3 Units.

This course examines aspects of skilled performance and motor learning from a developmental perspective. It is concerned with the major principles of human performance and skill learning, the progressive development of a conceptual model of human actions and the development of skill through training and practice. Topics include human information processing, decision-making and movement planning, perceptual processes relevant to human movement, production of movement skills, measurement of learning, practice design, preparation, organization, and scheduling; use of feedback, in addition to the application of motor learning principles to sport, physical education, industrial and physical therapy settings. Fieldwork requires clearance for local school districts (clear LiveScan fingerprint screening and negative TB test results). (GE3A)

HESP 157. The Clinician in Health and Exercise Science. 4 Units.

This course integrates theory and practice and requires students to develop a research topic, consistent with an explicitly and narrowly defined area of interest. Permission of the instructor is required.

HESP 159. Health Optimizing Physical Education. 3 Units.

This course introduces prospective physical education teachers to the principles and components of health-related fitness, appropriate curriculum for K-12 programming, comprehensive school and community-based physical activity planning, effective teaching principles, behavior change strategies, and advocacy approaches of physical activity and fitness. Prerequisites: HESP 131 and HESP 151.

HESP 160. Principles of Coaching. 3 Units.

This course is designed as an introduction to the principles of athletic coaching for modern day athletes. Emphasis is on a holistic approach to the theories, knowledge, and practices of coaching sport as prescribed by the National Standards for Sport Coaches. This course will explore coaching at various levels. Topics will include developing a coaching philosophy, evaluating theories in student-athlete motivation, understanding team dynamics, leadership, administration responsibilities, and improving player performance.

HESP 161. Biomechanics of Human Movement. 4 Units.

This course is an introduction to the biomechanics of human movement and the analytic procedures and techniques for subsequent application in the sport sciences and related fields. The course includes a review of basic functional/mechanical human anatomy and kinesiology. Outcome objectives are an understanding of mechanical principles governing human movement, skill in use of a variety of measurement techniques commonly applied in biomechanics, an ability to analyze motor skill performance via cinematographic/ computer methodologies and skill in prescriptively communicating results of analysis. Prerequisite: BIOL 011 or BIOL 051 or BIOL 061 or permission of instructor, and a lab fee is required.

HESP 163. Therapeutic Exercise and Rehabilitation. 4 Units.

This course is an application of the theory and principles associated with therapeutic exercise and the application of various rehabilitation techniques and procedures during the course of an athlete's rehabilitation to attain normal range of motion, strength, flexibility, and endurance. Prerequisite: BIOL 071; HESP 133 or permission of instructor, and a lab fee is required.

HESP 173. Health Care Management and Professional Development. 4 Units.

This course is an in-depth study of the management of health care organizations related to finances, facilities, equipment, organizations structures, medical/insurance records, risk management, human relations, and personnel. Practical and conceptual skills are taught to help students focus on more efficient health care delivery. Also covered is the development of leadership skills, future trends in health care management, guidelines for designing effective work groups and managing conflict.

HESP 177. Cardiovascular Physiology. 4 Units.

This course seeks to fulfill two main objectives: 1) to establish a foundational understanding of clinical cardiovascular physiology and 2) to be able to perform and interpret cardiopulmonary exercise tests to examine cardiac, metabolic and respiratory pathology. Prerequisite: HESP 129 and upper division class standing. Lab fee required.

HESP 179. Introduction to Research. 4 Units.

This course covers the rationale for and status of professional research; research designs and their applicability to students' disciplines, review, critique and synthesis of selected literature; development of research proposal and pretest of instrument.

HESP 180. Epidemiology. 4 Units.

This course is an introduction to the principles and practice of epidemiology. It explores the history, concepts, and methods of epidemiologic investigation. The statistical models taught in this class include the receiver operating characteristic curve, chi-square test, t-test, binary logistic regression, and linear regression. Students will learn to develop research designs that employ these tests and will be able to conduct them to evaluate patient care, quantify risk, and understand the patterns of illness and disease in populations.

HESP 182. Exercise Testing and Prescription. 4 Units.

This course is primarily designed to provide students with the hands-on training and theoretical background to competently assess levels of wellness/fitness in an "apparently healthy" (i.e. low risk) adult population. The topics and skills addressed include health screening protocols/risk stratification, use of Informed Consent documents, as well as measurement protocols for the health-related components of fitness (i.e. cardiorespiratory fitness, muscular fitness, flexibility, body composition). These skills are then used to prescribe lifestyle and/or exercise modifications that result in individual progress toward a desired goal. Prerequisite: HESP 129.

HESP 187. Internship in Health and Exercise Science. 4 Units.

This course provides an opportunity for qualifying students to work in an area of Health and Exercise Science that interests them. Prerequisites: HESP 157, GPA 2.0, no grade below "C-" in major, and approval of course supervisor.

HESP 187F. Internship. 1-4 Units.

HESP 187G. Internship. 1-4 Units.

HESP 189. Practicum: Coaching. 1 or 2 Unit.

The practicum offers non-classroom experiences in activities related to Sports Sciences, under conditions determined by the appropriate faculty member. HESP 189 represents advanced practicum work involving increased independence and responsibility. Enrollment is limited to eight units maximum of HESP 089/189A, B, C, D, H, J, K offerings and no category within a course may be repeated for credit. A list of specific courses follows. Grading option is Pass/No Credit only.

HESP 189B. Practicum: Athletic Training III. 4 Units.

This is a clinical education course in the field of athletic training. It incorporates an experiential learning environment designed to prepare students for a career in athletic training. Advanced skills are introduced within the daily operations of the athletic training room and in the care of the athletes. Criteria for progression must be met before enrolling in subsequent practicum course. Prerequisite: HESP 089K.

HESP 189C. Practicum: Biomechanics. 2 Units.

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Grading option is Pass/No Credit only.

HESP 189D. Practicum: Exercise Physiology. 2 Units.

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Grading option is Pass/No Credit only.

HESP 189F. Practicum: Coaching. 2 Units.

Students are assigned to an intercollegiate or interscholastic sports team for the semester and participate in practice sessions throughout the specific sport season. Written guidelines are developed cooperatively by the supervisor, coach and student. Prerequisites: HESP 139 and HESP 155.

HESP 189H. Practicum: Sports Law. 2 Units.

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Grading option is Pass/No Credit only.

HESP 189J. Practicum: Kinesiology. 2 Units.

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Prerequisite: HESP 133 with a "C-" or better. Grading option is Pass/No Credit only.

HESP 189K. Practicum: Athletic Training IV. 4 Units.

This is the fourth in a series of four consecutive clinical education courses in the field of Athletic Training. The course incorporates an experiential learning environment designed to prepare students for a career in Athletic Training. Advanced Athletic Training knowledge and skills will also be introduced within the daily operations of the Athletic Training Facility and your Clinical Assignment and in the care of patients. Prerequisite: HESP 189B.

HESP 191. Independent Study. 1-4 Units.

HESP 193. Special Topics. 1-4 Units.

HESP 195. Ethical Issues in Sport. 3 Units.

The primary goal of this course is to enhance student awareness regarding their values, their evolving moral and ethical codes, and the ways of addressing moral problems. Students examine various ethical theories and questions encountered in the field of Sport Sciences. As part of this course, students need to identify necessary information from various sub-disciplines in order to make professional and ethical decisions. Senior standing.

HESP 197. Independent Research. 1-4 Units.

HESP 200. Advanced Health and Exercise Science Law. 4 Units.

This course examines legal issues and responsibilities relevant to health and exercise science professionals. This course is divided into two parts. Part I introduce basic concepts of the legal system and reviews general legal principles of tort and contract law. Part II focuses upon specific topics to which legal principles and risk management strategies apply. This course is taught combining lecture, class discussion, a written research project, and experientially based assignments designed to develop the ability to practically apply specific circumstances and facts to the law and risk management planning. In-class oral arguments using relevant case law, review of local facilities and programs, and legal observations in San Joaquin County courtrooms will supplement course content and offer students "hands on" learning opportunities.

HESP 233. Advanced Kinesiology. 4 Units.

This graduate seminar considers the musculoskeletal analysis of human movement, posture, exercise prescription, and rehabilitation. Prerequisite: HESP 133 or permission of instructor. Graduate standing.

HESP 235. Graduate Nutrition/Exercise Metabolism. 4 Units.

Students study the principles of nutrition as they relate to health and participation in sport or physical activity. The course includes calculation of energy needs and expenditures, and the role of carbohydrates, fats, protein, vitamins, minerals, and water in sport and physical activity.

HESP 237. Advanced Sport Psychology. 4 Units.

This course provides a detailed examination of the theories and concepts that explain how the human psyche affects sport performance. Particular emphasis is given to the application of these concepts for coaches and athletes.

HESP 247. Advanced Exercise Physiology. 4 Units.

This course is an advanced study of physiological responses to exercise with emphasis on laboratory methods and procedures for testing and demonstrating these responses for research application. Lab fee is required. Prerequisites: HESP 147 and permission of the instructor.

HESP 248. Applied and Clinical Physiology. 4 Units.

This course is designed to study the fundamental principles of exercise testing and interpretation for high risk, healthy, and athletic populations. The course is structured to focus on the cardiovascular, metabolic, and pulmonary responses to aerobic exercise and implications for designing training programs to enhance health, fitness, and performance. This course serves as a foundation for clinical exercise science and the use of exercise testing in the study of cardiac, metabolic and respiratory pathology.

HESP 253. Advanced Adapted Physical Education. 4 Units.

This course provides the culminating learning experience for those teaching credential candidates who are completing the waiver program with an emphasis in adapted physical education. Lab fee required.

HESP 255. Advanced Motor Learning. 4 Units.

This graduate course examines both the information processing and dynamical systems approaches to the study of human motor behavior and skill acquisition. Content is theoretically and research based with a behavioral emphasis. Topics covered include: variability and motor control, visual control of action, the role of reflexes, task interference, limitations in information processing, effects of stress on performance, and the Schema theory. It is intended to provide students with an advanced understanding of the conceptual, functional properties of the motor system and human motor performance and their application to teaching, coaching, industrial and therapeutic settings.

HESP 257. The Clinician in Health and Exercise Science. 4 Units.

This course offers students an opportunity to integrate academic, experiential, and career interests. Each student will: (1) observe at least one carefully selected clinical site throughout the term that is relevant to individual professional/educational interests or research reports that address career options in HESP (if observation sites are unavailable) and (2) research a narrowly defined issue relevant to HES. This course is intended to enhance professional development through experiential learning, continue the development of research skills, advance academic knowledge, and address educational priorities. Students should complete the course with a better understanding of at least one career option within the broad field of health and exercise science and its related research issues.

HESP 261. Advanced Biomechanics of Sport. 4 Units.

This course is an advanced study of mechanical principles which influence human movement. Both non-cinematographic and cinematographic/videographic techniques are used to analyze and evaluate motor skills and errors in performance and critical evaluation of current research findings in biomechanics. Lab fee required. Prerequisite: an undergraduate course in kinesiology or biomechanics or permission of instructor.

HESP 279. Research Methods in Health and Exercise Science. 4 Units.

This in-depth evaluation of the various methods used in the disciplines of health and exercise sciences, includes experimental, descriptive, qualitative and historical approaches. Students learn the means of selecting a research problem and planning its solution as well as important considerations to regard in reviewing the literature. The course also includes an overview of proper form and style in research writing. Student must complete a fully developed Research Proposal as part of this course. Prerequisites: a course in statistics & Graduate standing.

HESP 287. Advanced Internship: Sport Medicine. 4 Units.

This course provides an opportunity for qualifying students to work in an area of sports medicine that interests them. Prerequisites: HESP 257 with a "C" or better and permission of instructor. Graduate standing. Grading option is Pass/No Credit only.

HESP 289B. Advanced Practicum: Coaching. 2-4 Units.

This practicum offers non-classroom experiences in activities related to Sports Medicine, under conditions determined by the appropriate faculty member. HESP 189 represents advanced practicum work that involves increased independence and responsibility. Enrollment is limited to six units maximum of HESP 089/189A, B, C, D offerings and no category within a course may be repeated for credit. Grading option is Pass/No Credit only.

HESP 291. Independent Study. 1-4 Units.

HESP 293. Special Topics. 3 or 4 Units.

HESP 297. Independent Research. 1-4 Units.

HESP 299. Thesis. 4 Units.

Psychology Courses

PSYC 101. Research Methods and Statistics in Psychology I. 5 Units.

This course is the first course in a two-course sequence required for the psychology major. This course will teach the student how to design, complete, analyze, interpret, and report empirical research used to test hypotheses derived from psychological theory or its application, and to be able to critically evaluate scientific research produced by others. Prerequisite: Fundamental Math Skills requirement. (GE3B)

PSYC 102. Research Methods and Statistics in Psychology II. 5 Units.

This course is the second course in a two-course sequence required for the psychology major. This course will teach you how to design, complete, analyze, interpret, and report empirical research used to test hypotheses derived from psychological theory or its application, and to be able to critically evaluate scientific research produced by others. Prerequisite: PSYC 101 with a "C-" or higher.

PSYC 115. Advanced Lab in Cognitive Psychology. 4 Units.

This advanced lab will focus on more in-depth exploration of a specific topic area within the field of Cognitive Psychology. The course will include strong research/applied component that will help students get more hands on feel for research and/or application of the concepts within the field. Possible topics include Memory, Thinking Fast and Slow, or other topics. Prerequisites: PSYC 015, PSYC 11102 with a C- or better.

PSYC 117. Advanced Lab in Clinical Psychology. 4 Units.

This advanced lab will focus on a more in-depth exploration of a specific topic area within the field of Clinical Psychology. The course will include a strong research/applied component that will help students get more hands on feel for research and/or application of the concepts Psychology, Testing and Assessment, or other topics. Prerequisites: PSYC 017, PSYC 053, PSYC 102 with a C- or better, or permission of instructor.

PSYC 118. Advanced Lab in Child Clinical Psychology. 4 Units.

This lab is a more in depth look at topics within the field of clinical child psychology. Each time the course is taught, a specific topic of study such as parenting, child mental health, etc. will be the focus. The course relies heavily on becoming aware of the available research within the field of Clinical Child Psychology as well as more effectively accessing and understanding research in general. Experiential opportunities will be included. Prerequisites: PSYC 017, PSYC 102 with a "C-" or better.

PSYC 125. History and Systems of Psychology. 4 Units.

This course traces the development of "modern psychology" from its birth in early philosophy to its founding as an independent discipline in the late 1800s to its current status with an emphasis on modern behaviorism and cognitive psychology as the two dominant theoretical systems in psychology. In addition, other modern developments such as evolutionary psychology and cognitive neuroscience are discussed. The course focuses on specific content areas and ideas in psychology and the individuals who are most credited with their development.

PSYC 129. Advanced Lab in Developmental Psychology. 4 Units.

This advanced lab will focus on a more in-depth exploration of a specific topic area within the field of Developmental Psychology. The course will include a strong research/ applied component that will help students get a more hands on feels for research and/ or application of the concepts within the field. Possible topics include The Study of Infants, Psychology of Aging, Cognitive Aging, or other topics. Prerequisites: PSYC 029, PSYC 102 with a C- or better. (DVSY, ETHC)

PSYC 153. Advanced Lab in Behavioral Psychology. 4 Units.

This advanced lab will focus more in-depth exploration of a specific topic area within the field of Behavioral Psychology. The course will include a strong research/ applied component that will help students get a more hands on feel for research and/or application of the concepts within the field. Possible topics may include Behavioral Economics, Behavioral Approaches to Common Childhood Problems, the Power of Habit, or other topics. Prerequisites: PSYC 053, PSYC 102 with a C- or better.

PSYC 158. Behavioral Assessment. 4 Units.

An overview of behavioral assessment techniques is examined. Specific topics include data collection, inter-observer agreement, social validity, treatment integrity, functional assessment, stimulus preference assessment, indirect assessment techniques, and functional analysis procedures. Prerequisites: PSYC 053 and permission of instructor.

PSYC 162. Ethical Behavior. 4 Units.

This course will cover professional conduct and ethical behavior within the broad discipline of psychology, as well as the specific ethical and professional guidelines for the Behavior Analysis Certification Board (BACB®). This course addresses ethical decision-making, regulatory standards, and professional behavior in assessment, treatment, and research, in a variety of settings. Although this course will encompass a variety of disciplines and settings within psychology, primary attention will be given to those disciplines intersecting with the practice of applied behavior analysis and on those settings in which behavior analysts in practice are most likely to operate. Topics include accountability, confidentiality and informed consent, quality of services, quality of life, emergency management, research and academic settings, professional collaborations, boundaries, cultural competence, and ethical safeguards. Prerequisites: Junior standing or higher and permission of the instructor.

PSYC 169. Advanced Lab in Social Psychology. 4 Units.

This advanced lab will focus on a more in-depth exploration of a specific topic area within the field of Social Psychology. The course will include a strong research/applied component that will help students get a more hands on feel for research and/ or application of the concepts within the field. Possible topics may include Social Influence, Conformity, or other topics. Prerequisites: PSYCH 069, PSYCH 102 with a C- or better.

PSYC 183. Research Design. 4 Units.

This course is the design and analysis of research using single subject and group designs. Prerequisite: PSYC 105 and permission of instructor.

PSYC 187. Internship. 1-4 Units.

This internship course gives experiences in a work setting and is contracted on an individual basis. PSYC 187 represents advanced internship work that involves increased independence and responsibility. Students may register for only one course listed below in any semester and may receive no more than four units of credit for any of these courses. Pass/no credit is the only grading.

PSYC 189. Practicum. 4 Units.

The practicum offers non-classroom experiences in activities related to the curriculum under conditions that is determined by the appropriate faculty member. PSYC 189 represents advanced practicum work which involves increased independence and responsibility. Students may register for only one course listed below in any semester and may receive no more than four units of credit for any of these courses. Pass/no credit is the only grading.

PSYC 189A. Applied Psychology Practicum. 4 Units.

Students will acquire skills necessary to the application of principles of general psychology to solve personal, organizational and social problems while serving as assistants to faculty and professional psychologists.

PSYC 191. Independent Study. 1-4 Units.**PSYC 195. Seminar. 4 Units.****PSYC 197. Independent Research. 1-4 Units.****PSYC 207. Psychology of Learning. 4 Units.**

This course focuses on the scientific investigation of learning and behavior. Both experimental and related theoretical developments are considered, as well as applications of the basic principles of learning to issues of social significance.

PSYC 251. Behavioral Treatment/Applications. 4 Units.

This course focuses on the application of behavior analytic principles and methods in applied settings, with an emphasis on behavior change procedures, maintenance and generalization of behavior change, and emergency interventions. Topics addressed include the definition and characteristics of applied behavior analysis, selection and evaluation of intervention strategies, measurement of behavior, display and interpretation of behavioral data, and behavioral assessment. Additionally, basic behavioral principles, single-case experimental design, and ethical issues are discussed in the context of behavioral assessment and intervention. Prerequisite: Open only to graduate students in the psychology major.

PSYC 258. Behavioral Assessment. 4 Units.

Students study an overview of behavioral assessment techniques is examined. Specific topics covered include data collection, inter-observer agreement, social validity, treatment integrity, functional assessment, stimulus preference assessment, indirect assessment techniques, and functional analysis procedures.

PSYC 262. Ethical Behavior. 4 Units.

This course will cover professional conduct and ethical behavior with the broad discipline of psychology, as well as the specific ethical and professional guidelines for the Behavior Analysis Certificate (BACB®). This course addresses ethical decision-making, regulatory standards, and professional behavior in assessment, treatment, and research, in a variety of settings. Although this course will encompass a variety of disciplines and settings within psychology, primary attention will be given to those disciplines intersecting with the practice of applied behavior analysis and on those settings in which behavior analysts in practice are most likely to operate. Topics include accountability, confidentiality and informed consent, quality of services, quality of life, emergency management, research and academic settings, professional collaborations, boundaries, cultural competence, and ethical safeguards. Prerequisites: Psychology major and graduate student status.

PSYC 278. Controversial Treatments in Applied Settings. 4 Units.

This graduate seminar covers the varieties and consequences of pseudoscience in the helping professions and how to avoid being influenced by them. The helping professions comprise a significant industry in the United States. This includes medicine, psychology (including behavior analysis), psychiatry, social work, and other forms of counseling. It includes community mental health centers, and other venues such as mental hospitals, crisis centers, and schools. Each profession has a code of ethics that calls on professionals to help clients, to avoid harm, to honor informed consent requirements and promote independence. Professional codes of ethics call on professionals to draw on practice-related research findings. What do we find if we look closely at their everyday behavior? To what extent do professionals and researchers honor obligations described in such codes of ethics? Although this course will encompass a variety of disciplines and settings, primary attention will be given to those disciplines intersecting the practice of applied behavior analysis and on those settings in which behavior analysts in practice are most likely to operate. Prerequisites: Psychology major and graduate student status.

PSYC 283. Research Design. 4 Units.

Students learn the design and analysis of research using single subject and group designs.

PSYC 285E. Personnel Supervision and Management I. 0.5 or 1 Units.

This course focuses on personnel supervision and management. Students will learn how to train others to design and implement behavioral assessments and interventions and oversee the implementation of behavioral programs by others. Students will also attend behavioral program planning meetings and review program-relevant literature. Prerequisites: Instructor permission.

PSYC 285F. Personnel Supervision and Management II. 0.5 or 1 Units.

This course focuses on personnel supervision and management. Students will learn how to train others to design and implement behavioral assessments and interventions and oversee the implementation of behavioral programs by others. Students will also attend behavioral program planning meetings and review program-relevant literature. Prerequisites: Instructor permission.

PSYC 287. Graduate Internship. 1-4 Units.**PSYC 289. Practicum. 1-4 Units.****PSYC 291. Graduate Independent Study. 1-4 Units.****PSYC 297. Graduate Independent Research. 1-4 Units.**

Pass/No Credit grading only.

PSYC 299. Thesis. 2 or 4 Units.

This course requires students, under the guidance and supervision of a designated faculty research advisor, to independently plan, organize, conduct, evaluate and write-up an original research project as partial fulfillment of the MA degree. Permission of instructor. Pass/No Credit grading only.

Biological Sciences

<http://www.pacific.edu/college/biology>

Phone: (209) 946-2181

Location: Biology Building, South Campus

Craig Vierra, Department Director of Graduate Program and Co-Chair

Joan Lin-Cereghino, Department Director of Graduate Program and Co-Chair

Programs Offered

Master of Science in Biological Sciences

For a graduate degree in the Department of Biological Sciences, the candidate may take a broadly based program in biology or may specialize in areas such as molecular and cellular biology, physiology or ecology.

Candidates for the master of science degree in biological sciences must hold a bachelor's degree that includes the equivalent of the baccalaureate program in biology at University of the Pacific. Candidates holding the bachelor's degree with a major in fields other than biology may be accepted provided deficiencies in biology are made up.

Knowledge

Demonstrate knowledge of research methods and skill to design and implement research studies in the biological sciences.

Communication

Demonstrate written, oral and interpersonal communication skills as needed for advanced study, teaching and research.

Teamwork

Develop collaboration, leadership, and intercultural skills as needed to participate in research studies, work productively with colleagues, and/or teach.

Breadth

Demonstrate broad knowledge of the biological sciences and deep knowledge of one or more areas of concentration, including molecular and cellular biology, physiology, microbiology, ecology, paleontology, and plant and animal systematics.

Ethics

Develop ethical reasoning as needed to design and carry out research and function successfully within the broad field of the biological sciences.

Professionalism

Demonstrate oral and written communication skills necessary for entry into the profession or further study.

Master of Science in Biological Sciences

Students must complete a minimum of 32 units with a Pacific cumulative grade point average of 3.0 in order to earn the master of science degree in biological sciences.

I. Required Graduate Courses

Select one of the following Techniques/Methods Course: 4

BIOL 259	Molecular Biological Techniques	4
BIOL 271	Methods in Field Biology	
BIOL 295	Graduate Seminar	4

Note: 1) Students who have received credit for BIOL 159 or BIOL 171 with a grade of B or better prior to entering the graduate program cannot take BIOL 259 or BIOL 271, respectively. With program director consent, these students must take either the alternative Techniques/Methods class (i.e., students with credit for BIOL 159 can take BIOL 271, and vice versa), or an additional 4 unit BIOL elective numbered 200 or above (see "Electives" below). **2)** All biology graduate students must take two semesters of BIOL 295.

II. Thesis/Research

Minimum of 8 units

BIOL 297	Graduate Research	4-6
BIOL 299	Thesis	2 or 4

III. Electives

BIOL Electives (3 courses numbered 200 or above excluding BIOL 291, BIOL 295, BIOL 297, and BIOL 299) 12

Note: 1) With program director permission, students may substitute BIOL 291 for one BIOL elective. **2)** With program director permission, students may substitute one 100-level BIOL course (excluding BIOL 191 and BIOL 197) for one graduate-level BIOL elective. **3)** Students may count a maximum of six (6) units of BIOL 297 toward their degree. **4)** Students are encouraged, where appropriate, to select courses offered by other departments or units of the University, such as Chemistry or the Thomas J. Long School of Pharmacy and Health Sciences.

Biological Sciences Courses

BIOL 101. Genetics. 5 Units.

Emphasis of study is heritable variations and their relation to structure, behavior and function of genetic material. This basic course is for students concentrating on biological sciences, medical sciences and liberal arts. In addition to lecture, one-three hour laboratory per week is required. Prerequisites: BIOL 051 and BIOL 061. Recommended: Sophomore standing.

BIOL 111. Anatomy and Physiology. 4 Units.

This lecture and laboratory course covers the structure and function of the major physiological systems of the human body, and it is intended primarily for students in the Dental Hygiene program. Students taking BIOL 111 do not receive credit for either BIOL 071 or BIOL 081. Prerequisites: BIOL 051 and BIOL 061.

BIOL 122. Principles of Immunology. 4 Units.

The fundamental properties of antigens and antibodies are covered with an emphasis on the theories of antibody production, tolerance, transplantation immunity, autoimmunity and tumor immunology. Prerequisites: BIOL 101 and CHEM 121.

BIOL 124. Cancer Biology. 4 Units.

The course examines the morphological and molecular events that accompany the changes of a normal mammalian cell into a cancer cell, with an emphasis on the major pathways that affect cell growth and division, cell communication, cell death and metastasis. Prerequisite: BIOL 101.

BIOL 126. Neurobiology. 4 Units.

This course focuses on the molecular and cell biology of neuronal function and development, and how neurons work together to retrieve and process information and respond accordingly, with thorough discussions of sensory and motor systems and a brief review of more complex brain functions, such as emotions, speech and language, and memory. Prerequisites: BIOL 051 and BIOL 061.

BIOL 128. Histology. 4 Units.

A study of the tissues which comprise the organs of the body is the focus. This course is limited to human tissues. Thin sections of organs will be studied and their structure related to function. Credit only given once for BIOL 128 or BIOL 129. Prerequisites: BIOL 051 and BIOL 061.

BIOL 130. Plant Kingdom. 4 Units.

Through lectures, laboratories and field trips, students are introduced to the morphology, reproduction biology and environmental requirements of all major groups of plants. Included are material bearing on the evolutionary relationships within and between each major group. Individual projects are required. Prerequisites: BIOL 051 and BIOL 061. (ENST)

BIOL 134. Comparative Physiology. 4 Units.

This course is a detailed review of organ function in diverse groups of organisms. Emphasis is on physiological adaptation to the environment. Prerequisites: BIOL 051 and BIOL 061.

BIOL 145. Microbiology. 5 Units.

The biology of microorganisms is studied with emphasis on viruses, bacteria, fungi and protozoa. In addition to lecture, one three-hour laboratory per week is required. Prerequisites: BIOL 051, BIOL 061; CHEM 025, CHEM 027.

BIOL 146. Industrial Microbiology. 4 Units.

An in-depth knowledge of the industrial applications of microorganisms. The course uses an understanding of microbial physiology and genetics to illustrate how these organisms are utilized to create commercial products ranging from medicines to food products. Prerequisite: BIOL 145.

BIOL 147. Medical Microbiology. 4 Units.

Medical microbiology covers a survey of microorganisms implicated in human disease; emphasis on characteristics and properties of microorganisms, chiefly bacteria and fungi which are responsible for pathogenesis. Laboratory includes methods of isolation, characterization, and identification of bacteria and fungi responsible for human disease. Prerequisites: BIOL 145 and CHEM 121 with a C- or higher or permission of instructor.

BIOL 148. Emerging Infectious Diseases. 4 Units.

This class focuses on the evolutionary and ecological principles driving new infectious diseases of humans, wildlife, and domesticated animals. Through the exploration and application of real cases worldwide, students will have an understanding of how diseases emergence and present threats to global health. Research projects, writing assignments, case studies, and other activities will help students to synthesize a stronger appreciation for this aspect of health. Prerequisites: BIOL 051 and BIOL 061.

BIOL 151. Parasitology. 4 Units.

Principles of parasitism as well as biology of animal parasites with special emphasis on the protozoa, plathelminths, nematodes, acanthocephala and arthropods are studied. Techniques of recovery of parasites from various vertebrate hosts are introduced including staining, mounting and identification. Prerequisites: BIOL 051, BIOL 061, BIOL 101. (ENST)

BIOL 152. Human Parasitic Diseases. 4 Units.

This class focuses on parasitic diseases of humans, wildlife, and domesticated animals. Through the exploration and application of real cases worldwide, students will have an understanding of how parasitic diseases emergence and present threats to global health. Midterm exams which focus on research projects and writing will help students to synthesize a stronger appreciation for these kinds of infectious diseases. Students will also engage in many discussions online as a method of improving their analytical and critical thinking, argumentative writing, and collaborative skills. Prerequisites: BIOL 051 and BIOL 061.

BIOL 153. Cell Biology. 4 Units.

Cell Biology studies cell structure and function with emphasis on the dynamic nature of the cellular environment and the methodologies of cell biology. The experimental basis of our present understanding of the cell is also stressed. Prerequisites: BIOL 051, BIOL 061, BIOL 101, CHEM 025 and CHEM 027. Recommended: Organic chemistry.

BIOL 155. Biological Electron Microscopy. 4 Units.

The process and techniques involved in examining biological specimens with the transmission electron microscope will be covered in detail. When competence in specimen processing is achieved, each student performs an original experiment as a term project. Prerequisites: BIOL 051, BIOL 061, CHEM 025, CHEM 027. Recommended: BIOL 101.

BIOL 157. Topics in Biomedical Research. 4 Units.

Basic research in the areas of cell biology, biochemistry, molecular biology and physiology are examined in their applications to current problems in medicine. Topics covered include genetic engineering, gene therapy, transplants and cloning. Prerequisites: BIOL 051, BIOL 061, BIOL 101; CHEM 121.

BIOL 159. Molecular Biological Techniques. 4 Units.

This advanced laboratory course in the methods of molecular biology, has an emphasis on modern techniques and their application in the laboratory. Topics covered include gene cloning, protein expression systems, nucleic acid isolation and purification, and basic methods of bioinformatics. Prerequisites: BIOL 101 and CHEM 121 with a "C-" or higher.

BIOL 160. Proteomics. 4 Units.

This course introduces students to the fundamental principles of mass spectrometry and its applications to investigate macromolecules, with an emphasis on proteins. The use of mass spectrometry, specifically in the area of proteomics, is an emerging, powerful technology that is rapidly becoming an essential tool for scientists to study biological systems and the function of proteins. Prerequisites: Grade of C or better in BIOL 061.

BIOL 162. Comparative Vertebrate Anatomy. 5 Units.

The evolution of vertebrate organ systems as revealed by comparative morphology are emphasized. Prerequisites: BIOL 051 and BIOL 061. Recommended: BIOL 101.

BIOL 165. Embryology and Development. 4 Units.

This laboratory course focuses on the events that occur as a single-celled embryo develops into an adult organism. Developmental processes are studied at the descriptive and mechanistic levels, leading to an understanding of how and why complex structures are produced. Major emphases is placed on animal embryology (both vertebrate and invertebrate) leading to the production to tissues, organs and organ systems. Later developmental processes also are studied, as well as sex determination. Additional topics include cancer and evolution as seen in the context of development. Prerequisites: BIOL 051, BIOL 061, BIOL 101.

BIOL 167. Evolution and Developmental Biology. 4 Units.

How do butterfly wings get their spots and stripes? Why do dolphins and humans have the same bones in their limbs? How did Darwin's finches quickly evolve so many different beak shapes? These are all questions that require an understanding of Evolutionary Developmental Biology (EvoDevo) to answer. EvoDevo explores the intersection of Evolution, Developmental Biology, and Genetics. This course covers introductory topics in those three fields, theoretical underpinnings of EvoDevo, as well as case studies. This course uses phylogenetic and developmental genetics frameworks to examine topics that include body-plans and patterning, genetic and morphological complexity, and novel features. Prerequisites: BIOL 51 and BIOL 61 or permission of instructor.

BIOL 168. Pharmacology. 4 Units.

Pharmacology is a complex field focusing on the mechanism of action of drugs. This course provides background information on the basic mechanisms of drug absorption, distribution and interaction with targets. In addition, this course covers how drugs are discovered and regulated. Finally, a selected set of drug families focusing on the nervous system and anti-cancer treatments are examined. This course is intended as a primer for later study of pharmacology covering many more drug families. Other courses such as Organic Chemistry, Physiology and Genetics are helpful but are not required. Prerequisites: BIOL 051, BIOL 061, CHEM 025, CHEM 027.

BIOL 169. Elements of Biochemistry. 4 Units.

The field of biochemistry is the focus in this non-lab course that is designed as a preparation for students who will attend a Pharmacy or Dental School. Topics include nucleic acid and protein structure and synthesis, intermediary metabolism, enzyme action, and synthesis and degradation of important biological molecules. The relationship of biochemistry, nutrition, and human disease is discussed. This course does not count for the Biochemistry major. Prerequisites: BIOL 051, BIOL 061, BIOL 101, CHEM 123 with a "C-" or higher.

BIOL 170. Human Anatomy. 5 Units.

This course is a study of the structure of the organ systems of humans. In addition to lecture, one three-hour laboratory per week is required. Credit will not be given if a student has taken BIOL 111. Prerequisites: BIOL 051 and BIOL 061.

BIOL 171. Methods in Field Biology. 4 Units.

A course focused on methods of biological investigation with emphasis on modern field sampling techniques and instrumentation. Students are trained in experimental design and quantitative data analysis used to address a range of biological questions. Prerequisites: BIOL 051 and BIOL 061 with a "D" or better. (ENST)

BIOL 175. Ecology. 5 Units.

The structure and dynamics of populations, biotic communities and ecosystems, is emphasized with particular focus upon relationships of organisms to their environments. Prerequisites: BIOL 051 and BIOL 061. (ENST)

BIOL 176. Ecology and Conservation Biology. 4 Units.

The principles of ecology are introduced with attention to consider threats and disruptions to ecological systems from the level of local populations through ecosystems, landscapes, and global processes. Ecological principles are used to help understand these systems, to make predictions for the future or for other systems, and to evaluate possible solutions. The class considers the importance of economic and demographic forces in causing conservation problems and in shaping conservation strategies, and students practice planning conservation areas. Prerequisite: BIOL 051. (ENST)

BIOL 177. Natural Medicines. 4 Units.

A lab course that surveys drugs found in nature, in particular their history, uses, and mode of action, and is designed as a preparation for students who will attend a Pharmacy or Dental School. Topics include history of medicine, survey of natural compounds relevant to pharmacology, and survey of naturally-derived drugs used to treat cancer, heart disease, and neurological disorders. Prerequisites: BIOL 051, BIOL 061, BIOL 101, CHEM 123 with a "C-" or higher.

BIOL 179. Evolution. 4 Units.

Lectures and readings on the mechanisms of evolutionary change in organisms are the focus. Prerequisites: BIOL 051 and BIOL 061. Recommended: BIOL 101.

BIOL 180. Human Physiology. 5 Units.

This course is a lecture- and laboratory-based review of the functions of the major organ systems of vertebrates with emphasis on the human body. Lab exercises demonstrate basic physiological processes in the human body and emphasize techniques of instrumental data acquisition and data presentation. Credit will not be given if a student has taken BIOL 111. Prerequisites: BIOL 061 and (CHEM 023 or CHEM 024 or CHEM 025 or CHEM 027). Recommended: one semester of genetics.

BIOL 182. Medical Endocrinology. 4 Units.

This lecture/lab course presents the fundamentals and current topics in human endocrinology from a medical and clinical perspective. Lectures cover normal endocrine physiology, endocrine diseases, diagnostic rubrics for patient assessment/disease evaluation, and current treatment recommendations. Lab is divided into two units: (1) Histology of healthy endocrine glands and histopathology of diseased endocrine glands; and (2) Developing patient assessment/diagnosis skills using computer "virtual patients." Prerequisites: BIOL 051, BIOL 061, CHEM 025 and CHEM 027. Recommended: BIOL 71 or 81 or BIOL 128.

BIOL 183. Comparative Oral+ENT Biology. 4 Units.

This course is a hands-on introduction to the mouth, ears, nose and throat of vertebrates. It provides a comparative view of the evolution, design and function of the mouth and associated cavities. Mastication, swallowing, speech and hearing are examined from various perspectives. Common clinical issues in humans, as well as species with extreme performances are also discussed. Labs include practical training in technical sculpture, casting, dissection, drilling, adhesives, wire work, anesthesia, and experiments on speech and hearing. The target audience is students interested in dentistry, otorhinolaryngology, audiology, speech pathology or organismal biology. Prerequisites: BIOL 051 and BIOL 061.

BIOL 185. Comparative Animal Behavior. 4 Units.

The ecology and evolution of animal behavior are discussed. Laboratory involves a quantitative study of animal behavior at Micke Grove Zoo. Prerequisites: BIOL 051 and BIOL 061. Junior standing in Biological Sciences or Psychology.

BIOL 186. Hormones and Behavior. 4 Units.

An on-line reading/discussion/writing course focusing on the bidirectional interactions between an animal's behaviors and its endocrine system. Topics include: overview of the vertebrate endocrine system, biological sex and gender issues, courtship and sex behaviors, parenting behavior, pheromonal communication, aggression and other social behaviors, learning and memory, hunger, stress, and biological rhythms. Discussions also analyze current research publications, research methodologies, and results. Students practice scientific writing and prepare a 10-12 page research paper. This course counts as an upper division elective in the Biology major and as an elective in the Gender Studies degree. Prerequisites: BIOL 051 and BIOL 061. (GEND)

BIOL 191. Independent Study. 2-4 Units.**BIOL 194. Science Communication. 4 Units.**

This course provides students the opportunity to improve their skills at assessment of primary scientific literature, oral presentation of scientific research, and scientific writing. Students critically analyze a series of journal articles related to their own research, perform several writing exercises, orally present preliminary results of their research or research prospectus, write a research proposal, and evaluate peers' oral and written communication efforts. Additionally, students attend and participate in departmental seminar presentations given by researchers from Pacific and other universities. Prerequisites: Instructor permission.

BIOL 197. Undergraduate Research. 1-4 Units.**BIOL 222. Immunology. 4 Units.**

Students study immunoglobulin structure, function, and expression in animals. Molecular and cellular mechanisms of humoral immune response, cell-mediated immunity, complement system, autoimmune diseases, tolerance induction, transplantations, cancer immunity, vaccines, and cytokine actions are also emphasized. Graduate standing.

BIOL 224. Cancer Biology. 4 Units.

The course examines the morphological and molecular events that accompany the change of a normal mammalian cell into a cancer cell, with an emphasis on the major pathways that affect cell growth and division, cell communication, cell death and metastasis.

BIOL 226. Neurobiology. 4 Units.

The course focuses on the molecular and cell biology of neuronal function and development, and how neurons work together to retrieve and process information and respond accordingly. It involves thorough discussions of sensory and motor systems and a brief review of more complex brain functions, such as emotions, speech and language, and memory.

BIOL 234. Comparative Physiology. 4 Units.

This course offers a detailed review of organ function in diverse groups of organisms. Emphasis is on physiological adaptation to the environment. Graduate standing.

BIOL 244. Developmental Biology. 4 Units.

Students examine the genetic control of development and the physiological mechanisms involved in fertilization and differentiation. Graduate standing.

BIOL 246. Industrial Microbiology. 4 Units.

An in-depth knowledge of the industrial applications of microorganisms. The course uses an understanding of microbial physiology and genetics to illustrate how these organisms are utilized to create commercial products ranging from medicines to food products. Prerequisite: BIOL 145.

BIOL 247. Medical Microbiology. 4 Units.

This course content is the same as BIOL 147 with three additional hours per week of seminar and/or special project. Graduate standing.

BIOL 251. Parasitology. 4 Units.

This course content is the same as BIOL 151. Principles of parasitism, biology of animal parasites with special emphasis on the protozoa, nematodes, helminths, acanthocephala, and arthropods are covered with three additional hours per week of seminar and/or special project. Graduate standing.

BIOL 253. Cell Biology. 4 Units.

This course content is the same as BIOL 153. Students take an in-depth look at the structure and function of a cell with an emphasis on the methodologies of Cell Biology. Research-based current understanding of the topics is stressed and a special project is required. Graduate standing.

BIOL 255. Biological Electron Microscopy. 4 Units.

This course content is the same as BIOL 155. The processes and techniques involved in examining biological specimens with the transmission electron microscope are covered in detail. When competence in specimen processing is achieved, each student performs an original experiment as a term project. Graduate standing.

BIOL 259. Molecular Biological Techniques. 4 Units.

This is an advanced laboratory course in the methods of molecular biology, with emphasis on modern techniques and their application in the laboratory. Topics covered include gene cloning, protein expression systems, nucleic acid isolation and purification, and basic methods of bioinformatics. Graduate standing.

BIOL 260. Proteomics. 4 Units.

This course introduces students to the fundamental principles of mass spectrometry and its applications to investigate macromolecules, with an emphasis on proteins. The use of mass spectrometry, specifically in the area of proteomics, is an emerging, powerful technology that is rapidly becoming an essential tool for scientists to study biological systems and the function of proteins. Prerequisites: Graduate standing.

BIOL 267. Evolution and Developmental Biology. 4 Units.

How do butterfly wings get their spots and stripes? Why do dolphins and humans have the same bones in their limbs? How did Darwin's finches quickly evolve so many different beak shapes? These are all questions that require an understanding of Evolutionary Developmental Biology (EvoDevo) to answer. EvoDevo explores the intersection of Evolution, Developmental Biology, and Genetics. This course covers introductory topics in those three fields, theoretical underpinnings of EvoDevo, as well as case studies. This course uses phylogenetic and developmental genetics frameworks to examine topics that include body-plans and patterning, genetic and morphological complexity, and novel features. Prerequisites: Graduate standing.

BIOL 268. Pharmacology. 4 Units.

Pharmacology is a complex field focusing on the mechanism of action of drugs. This course provides background information on the basic mechanisms of drug absorption, distribution and interaction with targets. In addition, this course covers how drugs are discovered and regulated. Finally, a selected set of drug families focusing on the nervous system and anti-cancer treatments are examined. This course is intended as a primer for later study of pharmacology covering many more drug families. Prerequisites: Graduate standing.

BIOL 271. Methods in Field Biology. 4 Units.

This is a course focused on methods of biological investigation with emphasis on modern field sampling techniques and instrumentation. Students are trained in experimental design and quantitative data analysis used to address a range of biological questions. Graduate standing.

BIOL 274. Biology of Insects. 4 Units.

A lecture and laboratory introduce a broad study of the structure and function of insects, the most diverse terrestrial organisms with over 1 million described species. The course includes a study of their anatomy, physiology, ecology, evolution, reproduction, behavior, and relation to humans. The laboratory work includes field trips in addition to the preparation of 50 classified insects. Project assignments include but are not limited to identification of taxa of interest, and analysis of insect data related to student interests.

BIOL 279. Evolution. 4 Units.

This course content is the same as BIOL 179 and a special project is required. Graduate standing.

BIOL 282. Medical Endocrinology. 4 Units.

This lecture/lab course presents the fundamentals and current topics in human endocrinology from a medical and clinical perspective. Lectures cover normal endocrine physiology, endocrine diseases, diagnostic rubrics for patient assessment/disease evaluation, and current treatment recommendations. Lab is divided into two units: (1) histology of healthy endocrine glands and histopathology of diseased endocrine glands; and (2) developing patient assessment/diagnosis skills using computer "virtual patients." Prerequisites: Graduate Standing.

BIOL 283. Comparative Oral+ENT Biology. 4 Units.

This course is a hands-on introduction to the mouth, ears, nose and throat of vertebrates. It provides a comparative view of the evolution, design and function of the mouth and associated cavities. Mastication, swallowing, speech and hearing are examined from various perspectives. Common clinical issues in humans, as well as species with extreme performances are also discussed. Labs include practical training in technical sculpture, casting, dissection, drilling, adhesives, wire work, anesthesia, and experiments on speech and hearing. The target audience is students interested in dentistry, otorhinolaryngology, audiology, speech pathology or organismal biology. Prerequisites: Graduate standing.

BIOL 291. Independent Study. 2 or 4 Units.**BIOL 294. Science Communication. 4 Units.**

This course provides students the opportunity to improve their skills at assessment of primary scientific literature, oral presentation of scientific research, and scientific writing. Students critically analyze a series of journal articles related to their own thesis research, perform several writing exercises, orally present preliminary results of their thesis research or thesis prospectus, write a thesis research proposal, and evaluate peers' oral and written communication efforts. Students also form and meet with their graduate thesis committee to discuss thesis research. Additionally, students attend and participate in departmental seminar presentations given by researchers from Pacific and other universities. Prerequisites: Open to first-year graduate students.

BIOL 295. Graduate Seminar. 4 Units.

BIOL 297. Graduate Research. 1-6 Units.

BIOL 299. Thesis. 2 or 4 Units.

Chemistry

<http://www.pacific.edu/Academics/Schools-and-Colleges/College-of-the-Pacific/Academics/Departments-and-Programs/Chemistry.html>

Phone: (209) 946-2271

Location: Classroom Building, Room 174

Jianhua Ren and Jerry Tsai, Co-Chairs

Programs Offered

Master of Science in Pharmaceutical and Chemical Sciences

Doctor of Philosophy in Pharmaceutical and Chemical Sciences

Specialized Areas in Chemistry (2): 1) Bioanalytical/Physical Chemistry and Biochemistry and 2) Chemical Synthesis and Drug Design/Discovery

For detailed program information for these degrees please consult the Thomas J. Long School of Pharmacy (<https://www.pacific.edu/academics/schools-and-colleges/thomas-j-long-school-of-pharmacy/academics/pharmaceutical-and-chemical-sciences.html>) section in this catalog.

Chemistry Courses

CHEM 121. Organic Chemistry. 5 Units.

An Introduction to the fundamental principles of organic chemistry including molecular structure, chemical bonding, functional groups, nomenclature, stereochemistry, basic organic reactions, and modern spectroscopy for structural characterization. Three lecture periods and two three-hour laboratory periods per week are required. Prerequisites: CHEM 025 and CHEM 027 with a "C-" or better.

CHEM 123. Organic Chemistry. 5 Units.

This course is a continuation of CHEM 121 with an emphasis on organic synthesis and mechanisms. The reactions of the aromatics, aldehydes, ketones, amines, carboxylic acids and their derivatives, and carbohydrates are covered. The course also touches on polymers and biological molecules including amino acids, proteins, and nucleic acids. Three lecture periods and two three-hour laboratory periods per week and are required. Prerequisite: CHEM 121 with a "C-" or better.

CHEM 132. Teaching and Learning Chemistry. 2 Units.

Students are prepared for participation in peer-led team-learning (PLTL) models of instruction in this course and it provides the opportunity for the students to become student leaders. In the PLTL, or General Chemistry Workshops, a small group of students get together under the guidance of the trained student leaders and work through a set of challenging problems prepared by the instructor of the course. The main idea is for all the students in the group to work together and gain experience and confidence solving challenging problems as a group. The Workshop provides an active teaching and learning experience. This course can be taken multiple times. Prerequisites: CHEM 025 and CHEM 027 with a "B" or better and permission of the instructor.

CHEM 134. Teaching and Learning Organic Chemistry. 2 Units.

Students are introduced to the learning and leadership model, Peer-Led Team Learning (PLTL). The student will gain hands-on experience in leading small discussion groups in organic chemistry. Instructor-covered topics in organic chemistry include specific instructions regarding the workshop lessons, strategies in guided problem solving for the groups, and review of organic chemistry materials. Instructor-covered topics in the didactic portion of the course include, but are not limited to, practical information (understanding motivation, managing time, dealing with dominating students, learning styles, group dynamics, study skills, helping students improve critical thinking, develop logical reasoning, and prepare for tests), and a foundation in learning theory. Prerequisites: CHEM 025 and CHEM 027 with "C-" or better, CHEM 121 and CHEM 123 with "B" or better and permission of instructor.

CHEM 141. Analytical Chemistry. 4 Units.

The roots of analytical chemistry and the principles used in modern instruments come from traditional techniques. These techniques include gravimetry, acid-base, complexometric, and redox titrations form the backbone of the course, which covers most major areas of modern quantitative analysis. The theory behind the techniques is covered through many numerical examples and their applications in environmental and biochemical analyses are emphasized. Standard procedures used in analytical laboratories are introduced, including error reporting, statistics, and quality assurance. Prerequisites: CHEM 025 and CHEM 027 or GEOS 142 with a "C-" or better. (ENST)

CHEM 143. Instrumental Analysis Lab. 4 Units.

Advanced analytical methodology involving electronic instrumentation is offered with emphasis on practical application and "hands-on" experience. The theory of instrumental operation is covered. Examples from modern spectroscopy, mass spectrometry, NMR, chromatography and other methods of analysis are included. Prerequisite: CHEM 141 with a "C-" or better or permission of the instructor.

CHEM 151. Biochemistry I. 4 Units.

This is the first semester of a 2 semester survey of biochemistry. The fundamental building blocks of biochemical systems are introduced covering amino acids and proteins (enzymatic & structural), nucleic acids, lipids and membranes, and carbohydrates. Particular topics of oxygen transport, enzyme kinetics, DNA replication, RNA expression, and protein expression are gone over in detail. Prerequisites: CHEM 121 and CHEM 123; CHEM 159 or CHEM 161 all with a "C-" or better; or permission of instructor.

CHEM 153. Biochemistry II. 3 Units.

As the second semester in this biochemistry series, the detailed biochemical mechanisms of the major metabolic pathways are covered. These pathways include glycolysis, gluconeogenesis, citric acid cycle, electron transport/oxidative phosphorylation, photosynthesis/Calvin cycle, lipid metabolism/fatty acid catabolism, and the synthesis/degradation of amino and nucleic acids. Discussion centers on the enzymatic mechanisms, energy, reduction/oxidation, control/regulation, and integration of these pathways. Prerequisite: CHEM 151 with a "C-" or better or permission of instructor.

CHEM 157. Biochemistry Laboratory. 4 Units.

Standard techniques used in Biochemistry. Exercises focus on the expression, mutation, and purification of a protein target and involves the following techniques: site-directed mutagenesis, column chromatography, electrophoresis, nucleic acid isolation and manipulation/use of relevant databases. Prerequisite: CHEM 151 or BIOL 169 with a "C-" or better; or permission of instructor.

CHEM 158. Nucleic Acid Chemistry. 4 Units.

This course surveys fundamental and advanced knowledge and current biotechnological applications in nucleic acid chemistry. Students completing this course will be able to improve critical thinking skills, oral communication, and technical writing skills. Topics related to structures of DNA and RNA, synthesis of DNA using an automated method, small molecule and nucleic acid interactions, DNA damage and repair, representative anticancer drugs, and nucleic acids used in real-life applications are discussed. Prerequisites: CHEM 121 and CHEM 123 with a grade of C- or better or instructor approval.

CHEM 159. Biophysical Chemistry. 4 Units.

This course applies the approaches and concepts of physical chemistry to describe the reactions and phenomena in biological systems. The principles of thermodynamics, kinetics, spectroscopy and transport phenomena are covered. While this is not a mathematics intensive course, the concepts require a basic knowledge of calculus. Prerequisites: MATH 051, CHEM 025, CHEM 027, PHYS 055 all with a "C-" or better or permission of instructor.

CHEM 161. Physical Chemistry -Thermodynamics and Kinetics. 4 Units.

A classical course on equilibrium thermodynamics and kinetics, including the laws of thermodynamics, the Gibbs equations, the phase rule, solutions, chemical reactions, non-ideal systems, multi-component phase equilibrium, equilibrium electrochemistry, kinetics, molecular dynamics and transport properties. Three class periods a week are required. Prerequisites: CHEM 027, MATH 053, PHYS 053 all with a "C-" or better, or permission of instructor. Students may not receive credit for both CHEM 159 and CHEM 161.

CHEM 163. Theoretical Physical Chemistry. 4 Units.

This course covers the principles of quantum theory, atomic structure and spectra, bonding, molecular spectroscopy, the foundations of statistical mechanics, the use of partition functions, the connection between statistical ensembles and thermodynamic potentials, and statistical models of gases, solids and liquids. This 4-unit course requires three 1-hour class periods and one 3-hour laboratory each week, accompanied by substantial out-of-class exercises. Prerequisites: CHEM 161 or CHEM 159, MATH 055, and PHYS 053, all with a C- or better, or permission of the instructor.

CHEM 165. Physical Chemistry III-Kinetics. 4 Units.

The fundamental principles of Chemical Kinetics are introduced in this course which covers: kinetic molecular theory of gases, rates of chemical reactions, rate laws, collision theory and chemical dynamics. Selected applications include photochemistry, catalysis, enzyme kinetics, pharmacodynamics, electrochemical systems, transport properties, viscosity, diffusion, and sedimentation. Prerequisites: CHEM 025, CHEM 027, MATH 053 or MATH 055, PHYS 053 or PHYS 055 or permission of instructor.

CHEM 167. Experimental Physical Chemistry. 4 Units.

This course introduces the principles and practice of physical chemical measurements. Techniques used in the design and construction of apparatus are discussed in lectures, and practice is provided through lab exercises and experiments. Subjects covered include kinetic theory of gases, reaction kinetics, thermodynamics, thermochemistry, and various flavors of spectroscopy. Research orientation is provided through the preparation of article manuscripts and oral presentations of results. Error analysis and statistical treatment of experimental data are emphasized. Prerequisite: CHEM 159 or CHEM 161 with a "C-" or better.

CHEM 171. Advanced Inorganic Chemistry. 4 Units.

This course includes: atomic structure, periodicity, covalent bonding theory, molecular geometry and symmetry, molecular orbital theory and its applications. Also covers coordination and organometallic chemistry, ligand field theory, spectroscopy, structure, reaction mechanisms, introduction to bioinorganic chemistry and metals in medicine. Two class periods and four hours of laboratory per week are required. Prerequisite: CHEM 163 with a "C-" or better or permission of the instructor.

CHEM 181. Intro to Molecular Simulation. 4 Units.

This course enables chemistry and other science students to utilize computational tools for molecular simulation. Students who complete this class are able to understand the theory behind molecular dynamics and force-fields. In addition, students construct and execute molecular simulations using standard tools such as CHARMM, NAMD, VMD and GAUSSIAN. Students then demonstrate an ability to analyze and present the data obtained from such simulations. Prerequisites: CHEM 025 and CHEM 027 with a grade of "C-" or better and permission of instructor.

CHEM 191. Independent Study. 2-4 Units.**CHEM 193. Special Topics. 4 Units.****CHEM 195. Chemistry Department Seminars. 1 Unit.**

The Department hosts a series of research seminars in which internationally recognized scientists present their latest research to an audience of Chemistry Faculty, graduate students, and Chemistry/Biochemistry undergraduate students. The selection of the speakers and the talks is designed to display a cross-section of current research trends, with talks representing each significant sub-discipline within Chemistry. Restriction on registration: Honors Students Only. Prerequisite: Permission of instructor.

CHEM 197. Independent Research. 1-4 Units.

Prerequisite: CHEM 025 with a "C-" or better. (ENST)

CHEM 197D. Independent Research. 1-4 Units.**CHEM 197E. Independent Research. 1-4 Units.****CHEM 197F. Independent Research. 1-4 Units.****CHEM 197G. Independent Research. 1-4 Units.****CHEM 197H. Independent Research. 2-4 Units.****CHEM 234. Selected Topics: Organic Chemistry. 4 Units.**

Topics presented at various times under this course description include physical organic, natural products and structure elucidation, stereochemistry, heterocycles and carbohydrate chemistry.

CHEM 243. Advanced Instrumental Analysis Lab. 4 Units.

Comprehensive investigation of absorption, emission, partition and electrical methods of chemical analysis. Theoretical basis and practical experience are combined in a total course. Some background in elementary optics and electronics useful but not required.

CHEM 245. Advanced Instrumental Methods. 4 Units.

Team-taught course. Students select from a number of instrumental projects, including: FTNMR, GC-mass spectrometry, advanced electrochemical techniques, high pressure liquid chromatography, photochemistry, fluorescence and phosphorescence and radioimmunoassay.

CHEM 264. Selected Topics - Physical Chemistry. 4 Units.

Topics presented at various times under this course description include: advanced thermodynamics, statistical mechanics, physical chemistry of solutions, physical methods in chemistry, photoluminescence and molecular photochemistry, and advanced kinetics. Permission of the instructor required.

CHEM 271. Advanced Inorganic/Bioinorganic Chemistry. 4 Units.

Review of basic concepts; descriptive transition metal chemistry; studies in main group and coordination chemistry; inorganic chemistry in biological systems; organometallic systems. Permission of the instructor required.

CHEM 274. Selected Topics - Inorganic Chemistry. 4 Units.

Topics presented at various times under this course description include: mechanisms of inorganic reactions, bonding theory, physical methods, nuclear chemistry and geochemistry.

CHEM 291. Independent Study. 2-4 Units.**CHEM 293. Special Topics. 3 or 4 Units.****CHEM 295. Graduate Seminar. 2 Units.****CHEM 297. Graduate Research. 1-4 Units.****CHEM 299. Thesis. 1-4 Units.****CHEM 381. Apprentice Teaching. 1-4 Units.****CHEM 391. Independent Study. 2-4 Units.****CHEM 395. Tchg. Sem. in the Clg. Chem.. 2 Units.****CHEM 397. Graduate Research. 1-6 Units.****CHEM 397A. Graduate Research. 1-4 Units.****CHEM 399. Dissertation. 1-6 Units.**

Pharm Chem Sciences Courses

PCSP 201. Statistics and Experimental Design. 3 Units.

This course involves the study of the application and limitations of statistical methods of inference as they apply to the fields of chemistry and the pharmaceutical sciences. Topics include the use of parametric statistics for statistical inference, comparisons of means, analysis of variance and linear regression. Parametric statistics and nonparametric measures of association and elements of good experimental design are also included. Graduate standing.

PCSP 203. Information and Laboratory Management. 1 Unit.

This course covers basic knowledge of Information Management, Intellectual Property and Patenting, Research Laboratory Operations and Safety, Good Maintenance Practice (GMP) and Good Clinical Practice (GCP). Graduate standing.

PCSP 204. Introduction to Nanotechnology. 4 Units.

The course provides an overview of Molecular Nanotechnology. It shows that the nano regime is so different from other regimes because both classical and quantum effects can be active, thus leading to unique properties of nano devices. MNT is a highly interdisciplinary science, which will be reflected in the course by making reference to physics, chemistry, biology, pharmacy and engineering. Applications of MNT, as they are already in use today or as they are planned for the future, will be discussed. Graduate standing or permission of instructor.

PCSP 205. Instrumental Analytical Chemistry. 4 Units.

Lectures focus on the theory and physical principles of instruments for the analysis of matter. Laboratory lecturer describes the actual operation of instruments. Students gain hands-on experience with the operation of instruments. Graduate standing.

PCSP 206. Models and Concepts in Chemistry. 4 Units.

The course focuses on a general understanding of chemistry in terms of models and concepts that describe structure, stability, reactivity and other properties of molecules in a simple, yet very effective way. Many chemical problems from organic, inorganic, and transition metal chemistry and biochemistry are presented and the applicability of the various models and concepts as well as their limitations are demonstrated. Graduate standing or permission of instructor.

PCSP 207. Bioanalytical Techniques. 3 Units.

Students are introduced to techniques of bioanalysis for the pharmaceutical and chemical sciences. The course provides a conceptual understanding and practical familiarity with techniques used for analysis of proteins and nucleic acids. Recommended: Basic biochemistry.

PCSP 208. Applied Pharmaceutical Analysis. 4 Units.

Students study analytical methods applied for the assessment of pharmaceutical quality, and the identification and quantification of active pharmaceutical molecules and metabolites in biological samples. Prerequisite: any analytical Chemistry or Biology background and permission of instructor.

PCSP 209. Technical Writing and Presentation. 1 Unit.

This course covers common written and oral forms of communication and scientific material. Graduate standing.

PCSP 211. Drug Design. 4 Units.

Students study modern methods used in the design of new drugs. Target selection, lead compound discovery and molecular modifications to optimize activity are studied. Graduate standing or bachelor's degree and permission of instructor.

PCSP 212. Methods in Bioanalytical, Physical and Biochemistry. 2 Units.

As a general survey, this course is an introduction to the current methodologies commonly used in bioanalytical, physical and biochemistry labs. These methods will be investigated by understanding their use in the lab and through studies published in the primary scientific literature. Lecture will focus on the technique and instruments and a lab component will consist of a demonstration of the method. A mini project that using a single selected methodology will be performed by each student with a final report detailing the underlying technology and theory.

PCSP 213. Biotransformation of Pharmaceutical Agents. 3 Units.

This course teaches the graduate students the chemical and biological principles of the transformations of pharmaceutical agents in the body and the impact of such transformations on pharmacokinetics, pharmacodynamics, toxicity, drug design and drug delivery. Graduate standing in TJ Long School of Pharmacy & Health Sciences or in Chemistry Department, or permission of instructor.

PCSP 214. Advanced Molecular Biochemistry. 4 Units.

This course presents a conceptual study of cellular function and control mechanisms at the molecular level. Prerequisite: Graduate standing.

PCSP 215. Molecular Modeling and Drug Design. 4 Units.

The course presents a thorough and in-depth overview of methods and techniques in computer assisted drug design (CADD) where especially the needs of the pharmaceutical industry are considered. Graduate standing or permission of instructor.

PCSP 216. Emerging Technologies in Drug Discovery. 2 Units.

This course is designed mainly for graduate students, with emphasis on new concepts in the discovery of small molecules and biologic drugs. Graduate student standing with advanced molecular biochemistry background and interested Professional students who completed PHAR 116.

PCSP 217. Drug Biotransformation. 3 Units.

This course generally meets two times a week (two 75-minute lectures per week). In this course, a mechanistic approach is employed to study human drug metabolizing enzymes. Other aspects related to the differential expression of these enzymes are discussed. Students need to submit a research proposal at the end of the course. Graduate standing or permission of instructor.

PCSP 218. Animal Techniques for Pharmaceutical Sciences. 2 Units.

This course is designed to present an opportunity for graduate students to understand and apply animal techniques to pharmaceutical science research. Prerequisite: Graduate standing or permission of the instructor.

PCSP 219. PK/PD Modeling and Simulation with Simcyp Simulator. 1 Unit.

This course is designed to introduce the basic PK/PD modeling and simulation using the Simcyp simulator software. Students must not be on probation and must not have failed or received No Credit in any courses. Prerequisites: Graduate student standing with successful completion of PCSP 223 or Professional students with successful completion of PHAR 213 and PHAR 311, or instructor permission.

PCSP 221. Fundamentals of Dosage Forms. 3 Units.

In this course the fundamental physicochemical properties and composition of various dosage forms is taught. Graduate standing.

PCSP 222. Thermodynamics of Pharmaceutical Systems. 3 Units.

This is a classical course on the applications of thermodynamics to the study of pharmaceutical systems. The course includes a review of the basic principles of thermodynamics. These principles are used to describe and study physical and chemical transformations of pure substances and mixtures in pharmaceutical systems. Graduate standing or permission of instructor.

PCSP 223. Pharmacokinetics and Pharmacodynamics. 3 Units.

This course teaches critical concepts and basic principles of pharmacokinetics and pharmacodynamics. Such concepts and principles are required for the students to understand the drug behavior in the body. Graduate standing or permission of instructor.

PCSP 224. Diffusion in Pharmaceutical Sciences. 3 Units.

Students discuss diffusion theories, experimental methods, and application to pharmaceutical/biological systems. Prerequisites: CHEM 161 and MATH 033 or equivalent or permission of instructor.

PCSP 225. Pharmaceutical Technologies. 2 Units.

Students study theory and practice in industrial pharmacy that include pre-formulation, formulation and pharmaceutical manufacture. Prerequisites: PHAR 114, 123, 133. Graduate standing.

PCSP 226. Industrial Pharmacy I. 4 Units.

This course is the first part of Industrial Pharmacy series designed mainly for graduate students, with emphasis unit operations, technology and formulation of pharmaceuticals. This is also very useful to professional students who are interested to pursue careers in pharmaceutical and biopharmaceutical industry. The basic understanding of Preformulation, pharmaceutical operations as they are applied to solid dosage forms from laboratory scale to manufacturing scale will be discussed in lectures and all students will do hands on experiments. In addition, quality and regulatory processes will be outlined for solid dosage forms. Prerequisites: PHRM 114 and PHRM 124.

PCSP 227. Industrial Pharmacy II. 3 Units.

This course is the second part of Industrial Pharmacy course series designed mainly for graduate students, with emphasis unit operations, technology and formulation of pharmaceuticals. This is also very useful to professional students who are interested to pursue careers in pharmaceutical and biopharmaceutical industry. The basic understanding of pharmaceutical operations as they are applied to semi-solid and modified release dosage forms from laboratory scale to manufacturing scale will be discussed in lectures and all students will conduct hands on experiments. In addition, quality and regulatory processes will be outlined for semi-solid and modified release dosage forms. Prerequisites: PHRM 114; PHRM 124; PCSP 226.

PCSP 228. Mathematical Modeling in Pharmaceutical Research. 3 Units.

Students study the mathematical modeling theory and application to problems in pharmaceutical research. Modeling is applied to three major areas: drug delivery, metabolic/biological cascades and pharmacological response kinetics. Prerequisites: PHAR 113 or permission of instructor. Recommended: MATH 057; PHAR 114 and PHAR 134.

PCSP 229. Advances in Drug Delivery Systems. 3 Units.

In this course the design and formulation/fabrication of controlled release and other novel drug delivery systems for oral, transdermal, ocular and other routes of delivery are covered. The biopharmaceutical rational and evaluation of such systems is also discussed. Graduate standing.

PCSP 230. Molecular Pharmacology of Nucleic Acids. 3 Units.

Students study the mechanisms by which drugs and other chemicals can affect gene expression and cell division through actions on DNA structure and nucleic acid and protein metabolism. Graduate standing.

PCSP 231. Molecular & Cellular Pharmacology. 4 Units.

This is the first course in the Molecular Pharmacology series. Effects of autonomic and central nervous system therapeutic agents and the mechanisms whereby these effects are induced. Drug classes are presented to illustrate the effects of drug classes in the treatment of disease. The molecular principles of drug action and receptor theory are covered. Enrollment in the PCSP program is required.

PCSP 233. Molecular Pharmacology III. 4 Units.

This is the third course in the Molecular pharmacology series, effects of antimicrobial, hematologic and gastrointestinal therapeutic agents and the mechanism whereby these are induced. Drug classes are presented to illustrate the effects of drug classes in the treatment of diseases. The mechanisms of drug toxicity are also covered. Enrollment in the PCSP program is required.

PCSP 234. Neurochemical Pharmacology. 3 Units.

Students study neurobiology of nerve cells and the neurochemical pharmacology associated with function of central and peripheral nervous systems. Graduate standing.

PCSP 236. Selected Topics: Advanced Toxicology. 2 Units.

This course teaches students the organ systems and mechanistic approach to toxicological assessment. Quantitative, environmental and regulatory aspects of toxicology are included as essential elements of toxicological evaluation. Graduate standing in the PCSP program or permission of instructor.

PCSP 237. Cell Culture Techniques. 3 Units.

This course teaches students basic techniques in mammalian cell culture. In addition, advanced topics of cellular techniques are demonstrated and discussed representative of current research methods. Permission of PCSP Program Director.

PCSP 240. Molecular Spectroscopy. 4 Units.

The basic theory behind infrared, visible, ultraviolet, and magnetic resonance spectroscopy are studied. The course includes the quantum mechanics of light absorption, atomic absorption and emission spectroscopy, vibrational spectroscopy of diatomic and polyatomic molecules, absorption and emission electronic spectroscopy and magnetic resonance spectroscopy. Graduate standing or permission of instructor.

PCSP 241. Advanced Organic/Bioorganic Chemistry. 4 Units.

Synthetically useful organic reactions not normally covered in the introductory courses are emphasized. The reactions are grouped according to their mechanistic type and discussed in terms of their reaction mechanisms and synthetic utility. Prerequisites: CHEM 121 and CHEM 123 with a "C" or better.

PCSP 242. Selected Topics: Advanced Organic Chemistry. 4 Units.

Topics presented at various times under this course description include: Physical organic, natural products and structure elucidation, stereochemistry, heterocycles and carbohydrate chemistry. Prerequisites: CHEM 121 and CHEM 123 with a "C" or better.

PCSP 243. Applied Computational Chemistry. 4 Units.

Besides the normal laboratory experiments traditionally expected, modern chemists/biochemists, whether in the chemical/pharmaceutical industry or academia, perform "experiments" on the computer by calculating the outcome of chemical and biochemical reactions. This in silico chemistry has become an integral part of the education in chemistry and the present course will provide an introduction into this field by addressing a general audience of chemists/biochemists and students from neighboring fields.

PCSP 244. High-Resolution NMR Spectroscopy. 4 Units.

A study of one and two dimensional FT-NMR techniques used for structure elucidation of organic molecules. Emphasis is placed on understanding the capabilities and limitations of these techniques, the information they provide and the practical aspects of their implementation. Permission of instructor.

PCSP 245. Proteins and Nucleic Acids. 3 Units.

Students study the chemical, physical and biological properties of the proteins and nucleic acids and their constituents. Topics include isolation, determination of composition, sequence and structure; correlation of structure and biological properties. Prerequisite: CHEM 151 with a "C" or better.

PCSP 246. Selected Topics in Advanced Biochemistry. 4 Units.

The field of biochemistry is always developing in new and different directions; the purpose of this course is to expose graduates students to the newest and most cutting edge research topics in the field of biochemistry. The materials will primarily primary literature articles. Graduate students will learn to quickly process scientific papers and then, synthesize simple explanations of notable research areas in biochemistry. Graduate students will refine these skills in a series of lectures by the student and instructor as well as student led discussions.

PCSP 247. Mass Spectrometry. 4 Units.

Students study the fundamentals of mass spectrometry, theory, instrumentation and applications to organic and biological molecules. Prerequisite: PCSP 205.

PCSP 248. Enzymology. 4 Units.

This class gives an introduction into the biochemistry of the various classes of enzymes with emphasis on laboratory techniques. Prerequisite: CHEM 151 with a "C" or better.

PCSP 254. Research Processes: Publications, Presentations, Grants and IRB. 3 Units.

This course prepares graduate students in Pharmacoeconomics and Health Care Outcomes and Services as a successful researcher by gaining experience in the development of a research plan, obtaining approval of the Institutional Review Board, submission of an extramural grant, dissemination of the student findings at a national or international meeting, and submission of a manuscript to a peer-reviewed journal. Prerequisite may be taken concurrently: PCSP 201, or other comparable statistics course at the discretion of the course coordinator. Permission of the instructor is required.

PCSP 255. Long Term Care Practice. 3 Units.

This class covers the clinical pharmacy component of a long term facility with special emphasis on opportunities and research needs. Students study the systematic approach to monitor the drug therapy of the long term care patient. Graduate standing.

PCSP 256. Health Services Management and Finance. 2 Units.

Health Care Finance offers an introduction to accounting, financial theory and practice in health care settings. It is designed to familiarize students with financial concepts and issues confronting managers in the health and pharmaceutical sectors. Prerequisites: Admission to the PCSP graduate program and permission of the instructor.

PCSP 257. Ambulatory Care Practice. 3 Units.

Students examine the application of clinical pharmacy to ambulatory care settings in an affiliated clinic or community pharmacy. Special emphasis is placed on opportunities and research needs. Graduate standing.

PCSP 258. Teaching and Evaluation of Learning and Competency. 2 Units.

Student abilities in development as a teacher are developed in an interactive, evidence-based manner covering the major components of teaching, learning, evaluation and assessment. Prerequisites: Admission to the PCSP graduate program and permission of the instructor.

PCSP 259. Topics in Acute Care Practice. 3 Units.

Students examine the application and investigation of clinical pharmacy in acute care setting with emphasis on medical management of common diseases and rational drug selection and dosing. Graduate standing.

PCSP 260. Advances in Neuropsychiatric Pharmaceutical Care. 2 Units.

Students examine pharmaceutical care for the patient with neurologic and psychiatric disorders. Emphasis is placed on appropriate use of drug therapy in the management of these disorders. Graduate standing. Permission of instructor.

PCSP 261. Advances in Cardiovascular Pharmaceutical Care. 3 Units.

Students explore the application of Drug Therapy to patient care with assignments that expand the students' knowledge of background material that support therapeutic guidelines. Permission of instructor.

PCSP 262. Vascular, Renal and Pulmonary Care. 4 Units.

Students study the pharmaceutical care for the patient with cardiovascular, respiratory and renal diseases. Emphasis is placed on appropriate use of drug therapy in the management of the disease. Prerequisites: Successful completion of all courses in semesters 1-3 of the Doctor of Pharmacy Program.

PCSP 263. Analytical Techniques in Pharmacoconomics and Health Care Outcomes and Services. 4 Units.

This course prepares graduate students in Pharmacoeconomics and Health Care Outcomes and Services to meet the challenges of a broad assortment of health services related research by providing fundamental principles and tools for the discipline. The class uses real world examples of research design, statistical evaluations and database selection and use to assess therapeutic, economic and humanistic outcomes. Prerequisites: PCSP 201 and PCSP 203.

PCSP 264. Applied Statistics in Health Services Research and Analysis. 3 Units.

This course prepares graduate students in Pharmacoeconomics and Health Care Outcomes and Services to meet the challenges posed by the needed to rapidly and accurately review, critique and assimilate information from health care and economic literature and to complete a full, advanced statistical analysis such as that required for the introduction and discussion sections of a research article or dissertation in pharmacoeconomics and health care outcomes. Prerequisites: PCSP 201, 203, 263.

PCSP 265. Health Care Economics. 2 Units.

This course is a current medical literature based course and is designed to prepare graduate students in Pharmacoeconomics and Health Care Outcomes and Services to meet challenges associated with understanding microeconomics terms and tools used in health care, medical literature and health care decision making processes. Readings, lectures and discussions emphasize processes used in economic decisions made by health care consumers, providers and third party payers. Primary topics include the demand for health care, how it may vary based on payment/payer options and the scope and supply of care available. Prerequisites: PCSP 263, 264, and permission of the instructor.

PCSP 266. Pharmacoeconomics and Microeconomics/Managerial Economics. 2 Units.

This course is designed to prepare graduate students in Pharmacoeconomics and Health Care Outcomes and Services to evaluate the applicability, importance and relevancy of pharmacoeconomics, microeconomics and managerial economics in answering questions and solving problems within the US health care system. Additionally, after completion of this course, students can assess, apply, interpret and determine the appropriate utilization of pharmacoeconomics, microeconomic, and managerial economic principles to address relevant healthcare issues and questions. Prerequisites: PCSP 201 and permission of the instructor.

PCSP 270. Theory and Methodology of Simulation of Natural Rock Formation. 4 Units.

This course is created particularly for PhD students of the Pharmaceutical and Chemical Sciences Program. It offers a comprehensive integration of multi-disciplinary sciences such as biology, life science, geoscience, ocean science, environment science, material science, etc. The course introduces some new breakthroughs and frontier discovery which reveal the mystery relationship between life science and geoscience. Upon completion of this course, PhD students are able to carry out professional lab and on-site tests and measurements. Graduate standing in chemistry, biology, geology, material science, environmental science or engineering or permission of instructor.

PCSP 271. Design Thinking for Entrepreneurs. 2 Units.

The course will examine aspects of an entrepreneur's journey and the elements that would be needed in his/her toolbox to tackle challenges - from ideation to economic viability. This course will benefit anyone interested in working in the industry as lead scientists, entrepreneurs, program champions, investors, technology transfer agents etc. Students will be introduced to the steps needed to form and grow a company including access to capital, collaborators, legal, and partners. Topics include an overview of the global biotechnology industry, idea generation, business plan formulation, intellectual property, raising capital, human resources including board composition, regulatory strategy, and company exits. Prerequisites: Graduate student standing with successful completion of PCSP 283 or Professional students that successfully completed first 3 semester, or instructor permission. Students must not be on probation and must not have failed or received No Credit in any courses.

PCSP 272. Clinical Pharmacology in Drug Development. 2 Units.

The course will cover important aspects of clinical pharmacology related to drug development. This course will benefit anyone interested in learning how to bring a compound to approval. The course will be delivered by leading experts in the field, with case studies presented for each topic covered. Prerequisites: student standing or Professional students that successfully completed the first 3 semesters, industry professionals or instructor permission. Students must not be on probation and must not have failed or received No Credit in any courses.

PCSP 273. Marketing Principles and Applications for Pharma Entrepreneurs. 2 Units.

The course will cover all of the basic marketing principles, including the 4 P's (Product, Promotion, Price and Place) and how to apply them to real world situations. This includes understanding and assessing markets for new pharma/biotech products. Key marketing elements that will be critical as components in product development process, forming a new company, gaining investor support, and ultimately in successful commercialization will be explored. Discussions will be structured for the stages of drug development from preclinical through to Phase 3 and the typical marketing elements that are needed for each stage. Factors relevant to the value proposition, the competitive landscape, and adoption of a new medical product and how to manage these factors in the early design and development phases will be also be covered. Guest speakers will be included to provide a heightened understanding and real world insights. Prerequisites: Graduate student standing or Professional students that successfully completed the first 3 semesters, industry professionals or instructor permission. Students must not be on probation and must not have failed or received No Credit in any courses.

PCSP 274. Regulatory Science for Drug Development Scientists. 2 Units.

The course will cover underlying scientific principles that forms the basis of federal regulations and guidance provided for drug development and approval. This course will benefit anyone interested in learning how to bring a drug product to approval. The course will be delivered by leading expert(s) in the field, with case studies for each topic covered. Prerequisites: Graduate student standing or Professional students that successfully completed the first 3 semesters, industry professionals or instructor permission. Students must not be on probation and must not have failed in any courses.

PCSP 275. Molecular and Cellular Pharmacology. 3 Units.

Students will learn the pharmacological principles, the mechanism of action of prototype drugs at the molecular and cellular levels and develop an appreciation of advanced research topics in current pharmacological science. Prerequisites: Graduate standing in Pharmaceutical and Chemical Sciences Program (PCSP).

PCSP 278. Molecular Physiology. 5 Units.

This course will cover physiological principles and molecular events that underlie the function of the nervous, cardiovascular, and respiratory systems at the organ and cellular levels. Prerequisites: MS and PhD Students.

PCSP 283. Multidisciplinary Project. 1 Unit.

Students in the Pharmaceutical and Chemical Science Graduate Program design an interdisciplinary project based upon the relevant contributions of their backgrounds. Enrollment in PCSP Graduate Program.

PCSP 287. Internship. 1-4 Units.

The internship offers an experiential learning program at a pharmaceutical/chemical/biotechnological industry, academic institution, government laboratory, or a clinical site that entitles the students to learn advanced techniques and practical application of the theoretical principles learned in a number of courses. Graduate students that have completed Category I course work, or obtained permission of coordinator shall enroll in this course. For students in thesis/dissertation tracks, concurrence of thesis/dissertation adviser(s) is required.

PCSP 291. Independent Study. 1-4 Units.

Independent Study is restricted to masters or doctoral (PhD) candidates. It may be repeated with permission as progress warrants. No more than eight credits may be used toward doctoral degree requirements. The student must be in good academic standing. Approval of the required contract for Independent Graduate Study is required. Graduate standing and permission of the instructor.

PCSP 295. Graduate Seminar. 1 Unit.

This seminar presents research-related topics given by both PCSP faculty and graduate students. Enrolled students are required to attend all seminars given throughout the pharmacy academic year and to give one seminar in that year. This course is required for all graduate students for the first three years of their tenure in the PCSP. Students who have already enrolled in this course for three years are encouraged to attend seminars without official enrollment. PCSP faculty members present a short talk on their research areas at the beginning of the fall semester each year. Graduate standing.

PCSP 297. Graduate Research. 1-4 Units.

Graduate Research is limited to masters or doctoral (PhD) candidates. It may be repeated with permission as progress warrants. No more than eight credits may be used toward doctoral degree requirements. Admission to the graduate program and permission of research director.

PCSP 299. Thesis. 1-6 Units.

This course provides one-to-one work by student with faculty research mentor to plan, organize, conduct, evaluate and write an original research project as a thesis for partial fulfillment of the MS degree. Admission to MS thesis program (PCSP) and permission of research advisor.

PCSP 387. Internship. 1-4 Units.

This internship offers an experiential learning program at a pharmaceutical/chemical/biotechnological industry, academic institution, government laboratory, or a clinical site that entitles the students to learn advanced techniques and practical application of the theoretical principles learned in a number of courses. Graduate Standing with completed Category I course work or permission of coordinator. For students in thesis/dissertation tracks, concurrence of thesis/dissertation adviser(s) is required.

PCSP 391. Independent Study. 1-4 Units.

Independent Study is restricted to masters or doctoral (PhD) candidates. It may be repeated with permission as progress warrants. No more than eight credits may be used toward doctoral degree requirements. The student must be in good academic standing. Approval of the required contract for Independent Graduate Study is required. Graduate standing and permission of the instructor.

PCSP 391D. Independent Study. 1-4 Units.**PCSP 395. Graduate Seminar. 1 Unit.**

This seminar presents research-related topics given by both PCSP faculty and graduate students. Enrolled students are required to attend all seminars given throughout the pharmacy academic year and to give one seminar in that year. This course is required for all graduate students for the first three years of their tenure in the PCSP. Students who have already enrolled in this course for three years are encouraged to attend seminars without official enrollment. PCSP faculty members present a short talk on their research areas at the beginning of the fall semester each year. Graduate standing.

PCSP 397. Graduate Research. 1-4 Units.

Graduate Research is limited to masters or doctoral (PhD) candidates. It may be repeated with permission as progress warrants. No more than eight credits may be used toward doctoral degree requirements. Admission to the graduate program and permission of research director.

PCSP 397A. Graduate Research. 1-4 Units.**PCSP 397B. Graduate Research. 1-4 Units.****PCSP 397C. Graduate Research. 1-4 Units.****PCSP 397D. Graduate Research. 1-4 Units.****PCSP 397E. Graduate Research. 1-4 Units.****PCSP 399. Dissertation. 1-6 Units.**

This course is only open to doctoral (PhD) candidates. No more than eight credits may be used toward doctoral degree requirements. Admission to PhD program (PCSP) and permission of research advisor.

Communication

<http://www.pacific.edu/Academics/Schools-and-Colleges/College-of-the-Pacific/Academics/Departments-and-Programs/Communication.html>
Phone: (209) 946-2505

Location: Psychology/Communication Building
Qingwen Dong, Department Director of Graduate Studies,
qdong@pacific.edu

Programs Offered

Master of Arts in Communication

- **Media and Public Relations**
- **Communication Education**
- **Communication Studies**
- **Political Communication**

The Department of Communication offers graduate-level instruction that leads toward the Master of Arts degree. The degree program combines training in communication theory, methodology and practice for students who desire knowledge and skills for solving work-related communication problems and for students who intend to enter doctoral programs. The program offers four concentrations of study:

1. Media and Public Relations
2. Communication Education
3. Communication Studies
4. Political Communication

The concentrations provide options for taking coursework from related disciplines that provide graduate students with an interdisciplinary approach to the study of Communication. Each concentration is designed for students who regard knowledge of Communication as important for their chosen professional careers but may or may not hold a bachelor's degree in Communication.

The nature of the discipline of Communication requires students to possess a high level of proficiency in written and spoken English. For this reason, students who come from non-English speaking cultures should only apply for the program if they have extensive training and experience in speaking and writing in the English language.

Thesis and Non-Traditional Thesis Options

The thesis option (Plan A) requires 28 units of coursework and 4 units of thesis. Students must successfully complete a 6-hour written comprehensive examination and a 1-hour oral examination administered by a committee of three professors prior to starting the thesis. Students must also successfully defend a thesis proposal before a committee of three professors prior to conducting their analysis or collecting data for the thesis. The thesis must contribute to the body of knowledge of the field in a significant manner.

The non-traditional thesis option (Plan B) requires 28 units of course work and 4 units of a non-traditional thesis project. Students must successfully complete a 6-hour written comprehensive examination and a 1-hour oral examination administered by a committee of three professors prior to starting the non-traditional thesis project. Students must also successfully defend a non-traditional thesis proposal before a committee of three professors prior to beginning their non-traditional thesis project. The non-traditional thesis must contribute to the body of knowledge of the field in a significant manner.

Grade Point Requirements

Candidates for a graduate degree must maintain a cumulative GPA of at least 3.0. No grade below a B- (2.7) counts toward the degree program in any course at the 200 level. No grade below a B (3.0) counts toward the degree program in any course at the 100 level.

Students who seek admission to the Department of Communication must maintain a GPA of 3.0 or above in all upper-division undergraduate study.

Graduate Assistant Requirements

A full-time graduate assistant normally takes 8 units. Graduate assistants who seek to take more than 8 units must receive department approval and approval of the Graduate Dean.

Communication Competence

1. Research, organize and deliver oral presentations effectively.
2. Write clearly, critically and persuasively.

Analytic Capacity

1. Analyze and evaluate scholarly/professional communication literature.
2. Evaluate, select and use relevant and credible information from multiple sources.
3. Apply communication theories, concepts, or principles of best practice and research methods to study or solve communication issues and problems.

Professionalism

1. Exhibit professional behaviors while undertaking work in a professional setting.

Master of Arts in Communication Concentration Communication Education

Students must complete a minimum of 32 units with a Pacific cumulative grade point average of 3.0 in order to earn the master of arts degree in communication with a concentration in communication education.

COMM 261	Critical and Qualitative Research Methods	4
COMM 262	Quantitative Research Methods	4
COMM 271	Graduate Seminar: Rhetorical Thought	4
COMM 272	Graduate Seminar: Interpersonal Communication	4
COMM 276	Communication in Learning Settings	4

Select one of the following courses from the School of Education:

EDUC 204 Education for a Diverse Democracy

EDUC 209 Curriculum Theory

Or an approved course by advisor

Select one of the following: 4

COMM 273 Graduate Seminar: Mass Communication

COMM 275 Graduate Seminar: in Public Relations

COMM 277 Media Relations

COMM 278	Political Communication	
COMM 287	Graduate Internship	
COMM 289	Graduate Practicum	
Or an approved course by the advisor		
Select one of the following options:		5

Thesis Option Plan A

COMM 299 Thesis

Non-Thesis Option Plan B

COMM 298 Non-Traditional Thesis

6-hour written comprehensive examination

1-hour oral comprehensive examination

No-Thesis Option Plan C

One COMM Seminar

6-hour written comprehensive examination

1-hour oral comprehensive examination

Master of Arts in Communication Concentration Political Communication

In order to earn the master of arts degree in communication with a concentration in political communication, students must complete a minimum of 32 units with a Pacific cumulative grade point average of 3.0.

COMM 261	Critical and Qualitative Research Methods	4
COMM 262	Quantitative Research Methods	4
COMM 271	Graduate Seminar: Rhetorical Thought	4
COMM 273	Graduate Seminar: Mass Communication	4
COMM 278	Political Communication	4
Select one of the following:		4

POLS Elective (One approved elective from Political Science department)

COMM Course (200 level course)

COMM 287	Graduate Internship	2
		or
		4

Select one of the following options: 4

Thesis Option Plan A

COMM 299 Thesis

Non-Thesis Option Plan B

COMM 298 Non-Traditional Thesis

6-hour written comprehensive examination

1-hour oral comprehensive examination

No-Thesis Option Plan C

One COMM Seminar

6-hour written comprehensive examination

1-hour oral comprehensive examination

Master of Arts in Communication Concentration Media and Public Relations

Students must complete a minimum of 32 units with a Pacific cumulative grade point average of 3.0 in order to earn the master of arts degree in communication with a concentration in media and public relations.

COMM 261	Critical and Qualitative Research Methods	4
COMM 262	Quantitative Research Methods	4
COMM 273	Graduate Seminar: Mass Communication	4

COMM 275	Graduate Seminar: in Public Relations	4
Select one of the following:		4
COMM 277	Media Relations	
COMM 278	Political Communication	
Select one of the following courses from the Department of Health, Exercise and Sports Sciences or School of Business:		4
BUSI 109	Management and Organizational Behavior	
BUSI 214	Negotiation	
BUSI 279	Leadership	
Or an approved course by advisor		
Select one of the following:		4
COMM 287	Graduate Internship	
COMM 289	Graduate Practicum	

Select one of the following options: 4

Thesis Option Plan A

COMM 299	Thesis	
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Non-Thesis Option Plan B

COMM 298	Non-Traditional Thesis	
6-hour written comprehensive examination		
1-hour oral comprehensive examination		

No-Thesis Option Plan C

One COMM Seminar		
6-hour written comprehensive examination		
1-hour oral comprehensive examination		

Master of Arts in Communication Concentration Communication Studies

Students must complete a minimum of 32 units with a Pacific cumulative grade point average of 3.0 in order to earn the master of arts degree in communication with a concentration in communication studies,

COMM 261	Critical and Qualitative Research Methods	4
COMM 262	Quantitative Research Methods	4
Select five of the following:		20
COMM 271	Graduate Seminar: Rhetorical Thought	
COMM 272	Graduate Seminar: Interpersonal Communication	
COMM 273	Graduate Seminar: Mass Communication	
COMM 275	Graduate Seminar: in Public Relations	
COMM 276	Communication in Learning Settings	
COMM 277	Media Relations	
COMM 278	Political Communication	
COMM 289	Graduate Practicum	
COMM 287	Graduate Internship	

Select one of the following options: 4

Thesis Option Plan A

COMM 299	Thesis	
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Non-Thesis Option Plan B

COMM 298	Non-Traditional Thesis	
6-hour written comprehensive examination		
1-hour oral comprehensive examination		

No-Thesis Option Plan C

One COMM Seminar		
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6-hour written comprehensive examination
1-hour oral comprehensive examination

Communication Courses

COMM 114. Argumentation and Advocacy. 4 Units.

Students are introduced to the theory and practice of argumentation, which is a method of decision-making emphasizing reason giving and evidence. The course includes instruction in debating, research, and critical writing, as well as advanced topics in the study of public deliberation. Prerequisites: COMM 027 or COMM 031 or COMM 043 or COMM 050, with a grade of C or higher. (PLAW)

COMM 116. Rhetorical Theory and Criticism. 4 Units.

The focus of this class is to help students derive insight into how symbolic processes affect human awareness, beliefs, values, and actions. The course treats criticism and analysis as methods of inquiry into the nature, character, and effects of human communication. It addresses various methods of rhetorical criticism in terms of their central units of analysis and typical intellectual concerns. Prerequisite: COMM 160 or permission of the instructor.

COMM 117. Public Advocacy. 4 Units.

This course teaches the principles of persuasion in public contexts in the U.S. (types and characteristics of public audiences, official and unofficial advocacy campaigns, and media framing of public issues) from historical and theoretical perspectives. The focus is to make students aware of the constraints and opportunities in public advocacy arguments and their public dissemination. (ENST, GE1A)

COMM 131. Media Production and Digital Culture. 4 Units.

Students learn how to use industry-standard production equipment, software, and facilities to produce audio podcasts and video projects while developing a practical and theoretical understanding of the basic fundamentals of lighting, sound, camera work, broadcasting, and audio/video editing. The focus is on producing original content ready for inclusion in students' portfolios using foundational methods that emphasize production quality and critical understanding of the production process. Lab Fee required. (FILM)

COMM 132. Writing for Media. 4 Units.

This course approaches media writing as a social process and practice that occurs across mediated platforms. These approaches include digital, political, economic, and professional conditions that enable or constrain writing and the writer. Exploration and practice of media writing processes include: research, preparation, and delivery. Students develop competence in script writing for news, commentary, fictional genres, social media, and emerging media. A lab fee is required.

COMM 133. Documentary Film as Persuasive Communication. 4 Units.

This course is a survey of documentary film beginning at the turn of the century and continuing through contemporary productions from a historical and rhetorical perspective. Students explore documentary film's origins and trace out its development in relation to its use and reception as students become familiar with the history of the documentary, the evolution of the genre, its rhetorical construction and its cultural influences. (DVSY, ETHC, FILM)

COMM 134. Documentary Film Production. 4 Units.

This course is a field video production course in documentary production. Through a series of assignments, lectures and screening students learn the basics of video production for documentary style productions. This includes research, management, pre-production, production and post-production processes. Students work primarily within groups to produce documentary projects using digital production equipment and techniques. There are no prerequisites for this course. (FILM)

COMM 135. Principles of Public Relations. 4 Units.

In this course students learn about media platforms and their application in contemporary media and business. The focus is on content creation and how to build content that performs well in social media, including a focus on social analytics, social media campaigns, and other contemporary public relations practices. Students engage in analysis and critique of various public relations practices in historical and contemporary moments.

COMM 137. Public Relations Case Studies. 4 Units.

In this course students learn theoretical and practical approaches to the analysis and delivery of public relations campaigns. Students explore and practice public relations processes including: research, preparation, content creation, media writing, delivery methods, and analytics for specific clients.

COMM 139. Theory of Mass Communication. 4 Units.

An overview of major theories and research in mass communication is presented. Application of theories that explain and predict communication effects of political campaigns, advertising, entertainment, and information are discussed. Theoretical areas that are covered include socialization, information, diffusion, advertising, persuasion, and uses and gratification's research in addition to the discussion of the state, function, and form of theory in mass communication. Prerequisite: COMM 160 or permission of instructor.

COMM 140. Writing for Public Relations. 4 Units.

Theory and practice in public relations writing in the context of publicity are emphasized. Students learn the write news releases, backgrounds, business letters and feature stories. Prerequisite: COMM 135.

COMM 142. Strategic Communication: Brand Management & Integrated Marketing. 4 Units.

Every day, we engage with countless brands and organizations through a variety of channels – whether we want to or not. The rapid ascent of digital media has fundamentally altered our experiences with these organizations and radically changed the landscape for the umbrella of terms (advertising, marketing, promotion, public relations, etc.) that encompass brand management. Brand Management is part of a social communication process that has evolved over time with changes in culture, technology, business strategies, and constantly converging media. This course is designed to introduce students to brand management strategies and practices through strategic communication theory and experiential applications vital to success in advertising, marketing, and public relations. The course's overriding objective is to help students develop a knowledge base of strategic communication and brand management from a pluralistic viewpoint. As a survey course, it addresses a wide range of organizations and brands including: Burger King, Lego, Lynx, Maserati, HSBC, and Popeye's. Prerequisites: COMM 31.

COMM 143. Intercultural Communication. 4 Units.

This course analyzes the major variables affecting communication between persons of different cultural backgrounds, explores essential intercultural communication theories that allow access to explanations and descriptions of cultural norms and values, and identifies guidelines for achieving intercultural communication competence. This course fulfills the diversity requirement. (DVSU, ETHC, GE1C)

COMM 145. Human Communication Theory. 4 Units.

Contemporary understandings of human interaction are studied beginning with epistemological issues as a framework. The course examines theory building, foundation theories of our discipline, and contextual theories.

COMM 147. Nonverbal Communication. 4 Units.

Major dimensions of nonverbal behavior exhibited by human beings in social interactional contexts are examined with special emphasis given to such areas as human proxemics, kinesics vocalics, haptics, and artifactual codes. Prerequisite: COMM 043 or permission of instructor.

COMM 149. Introduction to Organizational Communication. 4 Units.

Students are introduced to both a theoretical and an applied approach to the role of communication in various aspects of organizational functioning, such as motivation, leadership, decision-making, conflict management, message management, etc. Prerequisites: COMM 027 and COMM 043 or permission of instructor.

COMM 150. Capstone in Communication. 4 Units.

This senior level capstone seminar is devoted to expanding and applying the communication concepts that students have learned in the communication major to contemporary communication issues. Students undertake research projects and employ a variety of communication methodologies, including surveys, focus groups, content analysis, media productions, in order to study the social, historical and communicative implications of their chosen area of interest. This course is designed to offer Communication majors the opportunity to incorporate the content from their Communication theory and practice courses into their final papers and projects. This course is required for Communication majors. Prerequisites: Senior standing.

COMM 155. Persuasion. 4 Units.

This course is a survey of social psychological and communication approaches to social influence. Both past and contemporary theorizing is explored, and the methods of empirical research is discussed. Prerequisite: COMM 027 or permission of the instructor.

COMM 156. Public Relations Campaigns. 4 Units.

Building on the skills acquired in previous public relations courses, this course is designed to help students continue to develop and refine their critical and creative thinking in an applied context. Students will research, plan, and design public relations strategies and tactics in the development of a public relations campaign for a real-world client. Prerequisite: COMM 135.

COMM 160. Communication Research Methods. 4 Units.

This course is a study of research methods appropriate for examining communication-related problems. Topics for the course include historical-critical methods, descriptive methods, experimental methods, statistical models for data analysis and research reporting and writing. Prerequisites: COMM 027, COMM 031, COMM 043 with a "C-" or better.

COMM 161. Professions and Professionalism. 2 Units.

This senior capstone course helps students review and reflect on their studies in Communication with an eye toward transitioning onward to their next steps toward employment or graduate school. The primary focus of the course lies in sharpening students' understanding of how Communication theories and concepts can be applied to particular problems across a wide range of communication environments. Students will be able to talk and write about what they have learned in Communication in a clear and informed way to a variety of audiences including potential employers, co-workers, colleagues, and their audiences. This course is required for Communication majors. Prerequisites: Senior standing.

COMM 187. Internship. 2-4 Units.

Experiences in a work setting, are contracted on an individual basis. Internships are awarded on a competitive basis and are limited to the number of placements available. COMM 187 represents advanced internship work involving increased independence and responsibility; a corresponding COMM 087 course or equivalent is a prerequisite. Students may not accumulate for credit more than eight units in any specific internship (a total of four in a COMM 087 course and a total of four in a COMM 187 course). Graded Pass/No credit.

COMM 189. Practicum. 1-4 Units.

This course is non-classroom experience in activities related to the curriculum under conditions that the appropriate faculty member determines. Students register for one of the courses listed below. Courses numbered 189 are similar contexts with a more advanced level of performance and learning expectations compared to courses numbered 089. Note: A student may not accumulate for credit more than eight units in any specific practicum. A total of four in a COMM 089 course and a total of four in a COMM 189 course). Prerequisite: COMM 089.

COMM 189A. Advanced Print Practicum. 1-4 Units.**COMM 189B. Advanced Broadcast Practicum. 1-4 Units.****COMM 189C. Advanced Public Relations Practicum. 1-4 Units.****COMM 189D. Advanced Speech and Debate Practicum. 1-4 Units.****COMM 191. Independent Study. 2-4 Units.****COMM 197. Independent Research. 2-4 Units.****COMM 198B. Broadcast Practicum. 2-4 Units.****COMM 200. Communication and Consulting. 3 Units.**

This course explores topics related to the work of communication consultants. Through the course readings, presentations, workshops and other assigned work, students will acquire an understanding of the consulting process, including the role of the consultant, methods for undertaking a needs assessment, strategies for conducting training programs, and techniques for evaluating the work of consultants.

COMM 201. Applied Public Relations. 3 Units.

this course examines public relations strategies and tactics, as applicable to politics, non-profits and education. It will explore public affairs, public outreach and crisis management, and prepare students to communicate and utilize public relations with internal and external audiences.

COMM 202. Public Communication Campaigns. 3 Units.

The course is designed to provide a comprehensive overview of communication theory as it relates to attitudes and behavior changes involving public communication campaign issues. The course will also develop an understanding of the application of various quantitative and qualitative research methods to the design, execution, and evaluation of public communication campaigns.

COMM 203. New Communication Technology. 3 Units.

The course is designed to provide a comprehensive overview of a range of new communication technology and to give students basic skills and theoretical principles for their application to public communication through presentations, readings, videos placed on iTunes University and exercises. In addition, the course will enable students to identify, internalize and practice the necessary components of using new media technology for effective public communication.

COMM 204. Media Relations: New Media World. 3 Units.

The purpose of this course is to discuss and debate media relations principles and practices in relation to government, corporations, and public policy. From a scholarly examination of this unique and important form of communication, the course will survey the current trends and issues, and determine the validity of existing theories of media relations management from government, corporate, and community perspectives.

COMM 205. Communication Decision Making. 3 Units.

The purpose of this course is to assess communication strategies in decision making. From a scholarly examination of communication theories and decision making stages, the course will focus on the significance of communicating, administering, and evaluating decision making in professional environments.

COMM 206. Management of Organizational Communication. 3 Units.

This course examines both theoretical and applied approaches concerning the role of communication in various aspects of organizational function, such as motivation, leadership, decision-making, conflict management, and message management.

COMM 207. Advanced Professional Communication. 3 Units.

This advanced course both builds on basic oral and written professional communication skills, and goes well beyond them. The goals of this course are to provide opportunities for students to polish communication skills in different contexts, and to provide practice in and feedback on the interactive communication skills essential to successful professionals.

COMM 214. Argumentation and Advocacy. 4 Units.

This course introduces students to the theory and practice of argumentation, that is a method of decision-making that emphasizes reason giving evidence. The course includes instruction in debating, research, and critical writing, as well as advanced topics in the study of public deliberation. Prerequisites: three courses from COMM 027, 031, 043, 050 with a GPA of 2.5 or better, or permission of the instructor.

COMM 216. Rhetorical Theory and Criticism. 4 Units.

This course strives to help students derive insight into how symbolic processes affect human awareness, beliefs, values, and actions. The course treats criticism and analysis as methods of inquiry into the nature, character, and effects of human communication. It addresses various methods of rhetorical criticism in terms of their central units of analysis and typical intellectual concerns. Prerequisite: COMM 160 or permission of the instructor.

COMM 233. Documentary Film as Persuasive Communication. 4 Units.

This course is a survey of documentary film beginning at the turn of the century and continuing through contemporary productions from a historical and rhetorical perspective. Students explore documentary film's origins and trace out its development in relation to its use and reception as students become familiar with the history of the documentary, the evolution of the genre, its rhetorical construction and its cultural influences.

COMM 237. PR Case Studies and Problems. 4 Units.

This advanced course in public relations engages students in case study research and application of public relations principles. Written and oral presentations with adherence to professional standards of excellence are required. Prerequisite: COMM 135.

COMM 239. Theory of Mass Communication. 4 Units.

This course is an overview of major theories and research in mass communication. Students examine the application of theories that explain and predict communication effects of political campaigns, advertising, entertainment, and information. Theoretical areas covered include socialization, information, diffusion, advertising, persuasion, and uses of gratification's research. The state, function, and form of theory in mass communication is discussed. Prerequisite: COMM 160 or permission of the instructor.

COMM 245. Human Communication Theory. 4 Units.

Students study contemporary understandings of human interaction. Beginning with epistemological issues as a framework, the course examines theory building, foundation theories of our discipline, and contextual theories.

COMM 247. Nonverbal Communication. 4 Units.

The course examines major dimensions of non-verbal behavior exhibited by human beings in social interactional contexts. Special emphasis is given to such areas as human proxemics, kinesics, vocalics, haptics, and artifactual codes. Prerequisite: COMM 043 or permission of the instructor.

COMM 249. Introduction to Organizational Communication. 4 Units.

This course takes both a theoretical and an applied approach to introduce the student to the role of communication in various aspects of organizational functioning, such as motivation, leadership, decision-making, conflict management, message management, etc. Prerequisites: COMM 043 and COMM 027 or permission of the instructor.

COMM 255. Persuasion. 4 Units.

This course is a survey of social psychological and communication approaches to social influence. Both past and contemporary theorizing are explored, and the methods of empirical research is discussed. Prerequisite: COMM 027 or permission of the instructor.

COMM 256. Public Relations Campaigns. 4 Units.

Building on the skills acquired in previous public relations courses, this course is designed to help students continue to develop and refine their critical and creative thinking in an applied context. Students will research, plan, and design public relations strategies and tactics in the development of a public relations campaign for a real-world client.

COMM 260. Communication Research Methods. 4 Units.

Students study of research methods appropriate for examining communication-related problems. Topics for the course include historical-critical methods, descriptive methods, experimental methods, statistical models for data analysis and research reporting and writing. A minimum GPA of 2.5 is required. Prerequisites: COMM 027, 031, 043, or permission of the instructor. Recommended for sophomores.

COMM 261. Critical and Qualitative Research Methods. 4 Units.

The course provides a graduate-level introduction to qualitative methods used in communication studies. Topics covered provide an overview of rhetorical analysis, critical and cultural studies, ethnography, and case studies in public relations. The course emphasizes the connection between the theoretical foundations of qualitative inquiry and their applications to communicative interactions. Applications include the writing of criticism, field work in ethnography, and case studies.

COMM 262. Quantitative Research Methods. 4 Units.

This course develops expertise in undertaking quantitative research at the graduate level. The seminar focuses on various quantitative methods, that include content analysis, survey research, experimental design, and scale construction, as well as statistical techniques for analyzing quantitative data.

COMM 271. Graduate Seminar: Rhetorical Thought. 4 Units.

This course provides a graduate level introduction into the theory and practice of rhetorical criticism. The course focuses on the role of the critic and six modes of criticism which are as follows: generic criticism, cluster, narrative criticism, narrative criticism, ideological criticism, metaphoric criticism, and fantasy theme criticism.

COMM 272. Graduate Seminar: Interpersonal Communication. 4 Units.

This course provides the student who has achieved a general understanding of interpersonal communication issues the opportunity to choose and explore a particular area of special interest. The first phase of the course focuses on discussion of several theories of interpersonal behavior. Beginning approximately the fourth week of class, each student brings in and presents two or more abstracts of published articles related to the interest area. The last session(s) provides the opportunity for students to share their conclusions with the others. Each student completes a paper which presents a research proposal in the area of interest. The term paper is due the last scheduled day of classes.

COMM 273. Graduate Seminar: Mass Communication. 4 Units.

The purpose of this course is to provide an introduction to mass communication theory and scholarship from three different scholarly perspectives: the social science or traditional paradigm, the critical theory paradigm, and the ethnographic paradigm. Students are not only exposed to the literature in each of these areas, but they are also asked to conduct small scale studies from two of the three paradigms. Because the class is a seminar, student presentations and discussion are the major activity during class time.

COMM 275. Graduate Seminar: in Public Relations. 4 Units.

The Graduate Seminar in Public Relations is designed through in-depth study and research to formalize understanding of Public Relations: theory and practice, functions in organizations and role in society. Students study concepts and theories related to public relations role in social systems. A "mock" APR tests knowledge at the end of the semester with both a written and an oral examination.

COMM 276. Communication in Learning Settings. 4 Units.

This graduate seminar is designed to develop knowledge of current communication education research and effective communication strategies for teaching undergraduate courses in communication.

COMM 277. Media Relations. 4 Units.

This course is to discuss and debate media relations, principles, and practice.

COMM 278. Political Communication. 4 Units.

This course is designed to provide a grounding in rhetorical approaches to persuasion in a political context, to acquaint students with the range of political ideologies, and to examine the theoretical and pragmatic opportunities and obstacles to advocacy in the current mediated content of national, regional, or local politics.

COMM 279. Visual Communication. 4 Units.

This course investigates the persuasive influence of decoding visual images, advertising, public relations, political campaigns, public memory, and popular culture. Historical and theoretical aspects of visual communication will be studied in this course. Critical analysis methods and ethical implications of electronic and print media images will be discussed.

COMM 287. Graduate Internship. 2 or 4 Units.

COMM 287A. Internship. 1-4 Units.

COMM 289. Graduate Practicum. 2 or 4 Units.

COMM 291. Graduate Independent Study. 1-4 Units.

COMM 295. Graduate Seminar. 4 Units.

COMM 297. Graduate Research. 1-4 Units.

COMM 298. Non-Traditional Thesis. 4 Units.

After completing coursework and comprehensive examinations, students work in the Communication Graduate Program culminates with enrollment in COMM 298: Non-Traditional Thesis a three-part project that includes: a written Proposal for the non-traditional thesis, a written document that summarizes the non-traditional thesis, and a formal presentation and oral examination in which the student presents the completed work to his or her committee. The non-traditional thesis involves a study around an issue or challenge facing an organization or business with a media or public relations focus. It emphasizes both scholarly and practical application in line with the professional orientation of the Pacific Communication Department. The subject of the non-traditional thesis may be the student's employer. Students complete the non-traditional thesis under the direction of a full-time faculty member, who serves as chairperson of the student's non-traditional thesis committee. Two additional faculty members and/or industry professionals join the chairperson on the committee. A non-traditional thesis may take many forms, though all must be noteworthy for substance and artistic or professional quality. Non-traditional theses could include: documentary films and videos, slide programs, photo essays, feature or investigative article series, handbooks for professionals (e.g., the result of synthesizing and translating scholarly research), or magazine design and layout projects. The non-traditional thesis could be a well conceptualized magazine article series (for example, three 2,500-word stories) targeted to a specific publication. Such non-traditional theses must show both greater depth and breadth (conceptually, stylistically and in terms of quality of research) than any single assignment completed in a graduate level class. Prerequisites: Completion of 28 units and instructor permission.

COMM 299. Thesis. 2 or 4 Units.

COMM 391. Graduate Independent Study. 2-4 Units.

Health & Exercise Sciences

<https://liberalarts.pacific.edu/liberalarts/academics/departments-and-programs/health-exercise-sciences>

Phone: (209) 946-2209

Location: Main Gym

J. Mark VanNess (mvanness@pacific.edu), Department Chair; and Courtney Jensen (cjensen1@pacific.edu), Graduate Director.

The graduate program in Health, Exercise and Sport Sciences provides for scholarly study in Health and Exercise Science, Exercise Physiology and Human Performance. Each area of emphasis contains a blend of core and elective courses, enabling graduate students to design their program of study to meet their personal research and educational goals. These elective courses may be selected from other departments, including but not limited to Biology, Chemistry, Communications, Education and Psychology. Each graduate student is provided with the choice between comprehensive exams or a thesis project as their capstone experience. All graduate students are encouraged to include experiential learning, collaborative research, internships and overseas experiences in their program of study.

Programs Offered

Master of Arts:

- Health & Exercise Science

Admission Requirements

1. Undergraduate degree in health, exercise and sport sciences, a related discipline, or completion of essential undergraduate prerequisites, as determined by the Graduate Directors.
2. Minimum 2.65 GPA (Cumulative *and* Major)
3. 2 Letters of Recommendation
4. Personal Essay/Statement
5. Official copies of Transcripts
6. Resume/CV

**No GRE required

Communication Skills

1. Prepare and deliver presentations effectively.
2. Write clearly, critically and persuasively.

Leadership and Collaboration

1. Work and collaborate in groups toward a common goal.

Critical and Creative Thinking

1. Read, select and interpret important information from health, exercise & sport sciences literature.
2. Design and conduct research studies using appropriate methodologies.

Ethical Reasoning

1. Identify and apply ethical standards to the design and execution of research studies.

Master of Arts in Health, Exercise and Sport Sciences

Candidates have the choice of completing the Thesis Route or the Comprehensive Exam Route:

Thesis Route

Students must complete a minimum of 32 units with a Pacific cumulative and major/program grade point average of 3.0 in order to earn the master of arts degree in health, exercise and sport sciences. Twenty (20) of these units must be completed in health, exercise and sport sciences courses. Twelve (12) units may be completed in other departments.

Courses must be graded B- (2.7) or higher to be counted toward the degree program.

HESP 279	Research Methods in Health and Exercise Science	4
HESP 299	Thesis	4
Four HESP required classes (dependent on area of emphasis)		16
Two HESP approved electives (units must all be at the 200 level)		8
Total Hours		32

Notes:

- 1) Fulfillment of the prerequisite requirement for HESP 279 : i.e., completion of a course in statistics or an introduction to research course that involves statistical analysis of data, with a B- or better.

2) Units received for meeting this prerequisite requirement may not be included among the minimum units required for the master's degree.

3) Courses may be taken concurrently.

Thesis Notes:

1) Thesis candidates select a Thesis Chair on the basis of shared research interests/methodologies.

2) In consultation with their Thesis Chair, the thesis candidate selects their thesis committee members. The thesis committee should include a minimum of three members. A committee member may be selected from outside the department when an area of study crosses disciplinary lines.

3) Thesis candidates present an open colloquium that outlines the proposed thesis problem and basic research design. The colloquium must be successfully passed in the candidate's 1st year Spring semester. In the event the candidate fails to pass the colloquium, they are immediately placed on the comprehensive exam route.

4) Thesis candidates must satisfactorily complete thesis during their final semester or maintain continuing registration status until completed. Thesis are prepared in manuscript format, ready for submission to a peer-reviewed academic journal following the final oral exam.

5) Must satisfactorily complete an open final oral examination encompassing the thesis and general professional knowledge.

outlines are not permitted in the exam itself. A one-page bibliography is permitted for each scheduled exam session. The bibliography will be surrendered to the Graduate Directors at the completion of the exam.

3) Candidates are permitted 1 opportunity to re-sit any failed exam questions.

4) In the event that the candidate fails the re-sit, they must complete an additional 1 unit Independent Study class (in the content area of the failed question) and pass a comprehensive exam in this class.

5) The results are transmitted to the candidate in writing.

6) The Graduate Directors serves as the coordinator of the Comprehensive Exams.

Additional information:

1. All graduate students are assigned a faculty advisor by their respective Graduate Director.
2. Candidates meet with their faculty advisor twice a year to create their individual plan of study.
3. All independent studies and/or independent research must be reviewed and approved by their respective Graduate Director **prior to registration.**
4. Dates for open colloquiums and final oral examinations are coordinated through the Thesis Advisors.
5. Dates for written comprehensive examinations are coordinated through the Graduate Directors.

Comprehensive Exam Route

Students must complete a minimum of 32 units with a Pacific cumulative and major/program grade point average of 3.0 in order to earn the master of arts degree in health, exercise and sport sciences. Twenty (20) of these units must be completed in health, exercise and sport sciences courses.

Twelve (12) units may be completed in other departments. Candidates must successfully pass a written comprehensive exam in all classes that contribute towards graduation.

Courses must be graded B- (2.7) or higher to be counted toward the degree program.

HESP 279	Research Methods in Health and Exercise Science	4
Four required HESP classes (dependent on area of emphasis)		16
Three HESP approved electives (Units must all be at the 200 level)		12
Total Hours		32

Notes:

1) Fulfillment of the prerequisite requirement for HESP 279 : i.e., completion of a course in statistics or an introduction to research course involving statistical analysis of data, with a B- or better.

2) Units received for meeting this prerequisite requirement may not be included among the minimum units required for the master's degree.

3) Courses may be taken concurrently.

Comprehensive Exam Notes:

1) Candidates will sit comprehensive exams at the end of each academic year they are enrolled at Pacific.

2) Comprehensive Exam questions are completed for each graduate class the candidate takes in that academic year. Candidates are provided with the questions a minimum of 5 weeks in advance of the scheduled exam date. In consultation with the relevant graduate faculty member, candidates are permitted to prepare outlines for each question set. These

Hlth, Exercise Sprt Sci Courses

HESP 110. Health and Exercise Science Law. 4 Units.

This course examines legal issues and responsibilities relevant to health and exercise science professionals. This course is divided into two parts. Part I introduces basic concepts of the legal system and reviews general legal principles of tort and contract law. Part II focuses upon specific topics to which legal principles and risk management strategies apply. This course is taught combining lecture, class discussions, and experientially based assignments designed to develop the ability to practically apply circumstance to the law and risk management planning. In-class oral arguments using relevant case law, review of local facilities and programs, and legal observations in San Joaquin County courtrooms will supplement course content and offer students "hands on" learning opportunities.

HESP 129. Exercise Physiology. 4 Units.

This course is designed to introduce Health and Exercise Science students to core physiological concepts relevant to acute and long-term adaptations to the stress of exercise. An overview of metabolic, cardiovascular, respiratory, and skeletal muscle adaptations will be discussed along with special topics such as environmental stressors, obesity, and nutrition. Outside laboratory assignments are carried out for the purpose of applying lecture to practice and providing "hands on" opportunities to develop basic competencies in the interpretation of laboratory testing in exercise physiology. Lab fee required.

HESP 131. Assessment and Evaluation. 4 Units.

This course is the development of competencies of Health, Exercise and Sport Sciences majors for the design and implementation of procedures to appropriately measure and evaluate students, clients and/or programs. Basic data acquisition methods and statistical analysis techniques are presented. A Lab fee is required.

HESP 133. Functional Anatomy. 4 Units.

This course is a functional study of musculoskeletal anatomy and its relationship to human movement, posture, exercise prescription, and rehabilitation. Prerequisite: BIOL 011 or BIOL 051 or BIOL 061 or permission of instructor, and lab fee required.

HESP 135. Nutrition and Metabolism. 4 Units.

This course provides a thorough study of the principles of nutrition as they relate to health of individuals who participate in sports or physical activity. Topics include calculating energy balance and the role of carbohydrates, lipid, protein, vitamins, minerals and water in sports performance. The application of these topics for optimal metabolic functioning to a variety of physical activities is also presented. Prerequisites: HESP 129; BIOL 011 or BIOL 061.

HESP 137. Psycho-Social Aspects of Health Care. 4 Units.

Students study comprehensive, integrated coverage of psychosocial topics in healthcare involving clients, families, and other caregivers affected by pathology, impairment, functional limitations, and/or disability. This course will have a broad coverage of topics in healthcare including multicultural issues, spirituality, chronic condition, abuse/neglect, and PTSD. Emphasis will be placed on current, evidence-based literature, connecting theory to practice.

HESP 143. Prevention and Acute Care of Injury and Illness. 4 Units.

This course provides an overview of the field of Athletic Training, its organization, and the responsibilities of a Certified Athletic Trainer (AT) as part of the sports medicine team. Instruction emphasizes prevention, recognition, and immediate care of injuries and illnesses associated with physical activity. This course is recommended for freshmen.

HESP 145. Therapeutic Modalities. 4 Units.

This course is a lecture and laboratory experience designed to expose the student to the theory, principles, techniques and application of therapeutic modalities pertaining to the treatment of athletic or activity related injuries. Topics include discussions of the physiological effects, indications, contra indications, dosage and maintenance of each modality. Recommended: BIOL 081. Lab fee is required. Junior standing.

HESP 146. Health, Disease, and Pharmacology. 4 Units.

This course is an in-depth exploration of physical, mental, and social health with specific emphasis on recognizing the signs, symptoms, and predisposing conditions associated with the progression of specific illnesses and diseases as they relate to the physically active individual. Students also develop an awareness of the indications, contraindications, precautions, and interactions of medications used to treat those illnesses and diseases.

HESP 147. Muscle Physiology. 4 Units.

This course is focused on skeletal muscle physiology. Topics include the structure and function of muscle tissue, protein synthesis, cell signaling cascades, the specificity of adaptation, enzymes and their roles in metabolism, endocrine function, anabolic steroids, muscle damage, inflammatory physiology, neuromuscular principles (e.g., size principle), and the mechanisms of muscle fatigue. Laboratory assignments focus on skeletal muscle testing and evaluation. Prerequisite: HESP 129 and upper-division class standing. Lab fee required.

HESP 148. Research in Health and Exercise Science. 4 Units.

The purpose of this course is to gather, analyze and publish findings in health and exercise science. It is a practical course that focuses on collection of scientific information, appropriate analyses of data, and formulating conclusions that fit or modify existing paradigms. Students must have completed training in research methods and statistics and be capable of effective review of scholarly literature. At the conclusion of the course students are expected to submit their findings for peer review and publication. Prerequisites: HESP 180.

HESP 149. Clinical Evaluation and Diagnosis I. 3 Units.

This course presents an in-depth study of musculoskeletal assessment of the lower extremity, thoracic and lumbar spine for the purpose of identifying (a) common acquired or congenital risk factors that would predispose an individual to injury and/or (b) musculoskeletal injury common to athletics or physical activity. Students receive instruction in obtaining a medical history, performing a visual observation, palpating bones and soft tissues, and performing appropriate special tests for injuries and conditions of the foot, ankle, lower leg, knee, thigh, hip, pelvis, lumbar and thoracic spine. This course is directed toward students who pursue athletic training and/or physical therapy professions. Prerequisite: HESP 133 or BIOL 071, and a lab fee is required.

HESP 150. Clinical Evaluation and Diagnosis II. 3 Units.

This course presents an in-depth study of musculoskeletal assessment of the upper extremity, cervical spine, head and face for the purpose of identifying (a) common acquired or congenital risk factors that would predispose an individual to injury and/or (b) musculoskeletal injury common to athletics or physical activity. Students receive instruction in obtaining a medical history, performing a visual observation, palpating bones and soft tissues, and performing appropriate special tests for injuries and conditions of the shoulder, upper arm, elbow, forearm, wrist, hand, fingers, thumb, cervical spine, head, and face. This course is directed toward students who pursue athletic training and/or physical therapy professions. Prerequisites: HESP 149; HESP 133 or BIOL 071. Lab fee is required.

HESP 151. Elementary Physical Education. 3 Units.

This course is designed to prepare students for employment in an elementary school setting and provide them with the tools necessary to formulate and implement a comprehensive elementary PE experience for all students. Participants learn a wide range of teaching skills that facilitate the ability to create a quality active learning environment in elementary PE. Students explore effective teaching and assessment strategies, classroom management skills, the use of constructive feedback, the negotiation of diverse classrooms and the development of appropriate student learning outcomes. Students also are introduced to the subject matter of elementary PE and will undertake several teaching episodes. This course encourages students to engage in reflexive teaching practices, develop physically educated young people, maximize student involvement and enjoyment in PE and integrate core curriculum subject matter into PE lessons.

HESP 154. Stress Physiology. 4 Units.

In this course you will examine what stress is and how your body tolerates, adapts, and allows you to flourish with stresses.

HESP 155. Motor Development and Learning. 3 Units.

This course examines aspects of skilled performance and motor learning from a developmental perspective. It is concerned with the major principles of human performance and skill learning, the progressive development of a conceptual model of human actions and the development of skill through training and practice. Topics include human information processing, decision-making and movement planning, perceptual processes relevant to human movement, production of movement skills, measurement of learning, practice design, preparation, organization, and scheduling; use of feedback, in addition to the application of motor learning principles to sport, physical education, industrial and physical therapy settings. Fieldwork requires clearance for local school districts (clear LiveScan fingerprint screening and negative TB test results). (GE3A)

HESP 157. The Clinician in Health and Exercise Science. 4 Units.

This course integrates theory and practice and requires students to develop a research topic, consistent with an explicitly and narrowly defined area of interest. Permission of the instructor is required.

HESP 159. Health Optimizing Physical Education. 3 Units.

This course introduces prospective physical education teachers to the principles and components of health-related fitness, appropriate curriculum for K-12 programming, comprehensive school and community-based physical activity planning, effective teaching principles, behavior change strategies, and advocacy approaches of physical activity and fitness. Prerequisites: HESP 131 and HESP 151.

HESP 160. Principles of Coaching. 3 Units.

This course is designed as an introduction to the principles of athletic coaching for modern day athletes. Emphasis is on a holistic approach to the theories, knowledge, and practices of coaching sport as prescribed by the National Standards for Sport Coaches. This course will explore coaching at various levels. Topics will include developing a coaching philosophy, evaluating theories in student-athlete motivation, understanding team dynamics, leadership, administration responsibilities, and improving player performance.

HESP 161. Biomechanics of Human Movement. 4 Units.

This course is an introduction to the biomechanics of human movement and the analytic procedures and techniques for subsequent application in the sport sciences and related fields. The course includes a review of basic functional/mechanical human anatomy and kinesiology. Outcome objectives are an understanding of mechanical principles governing human movement, skill in use of a variety of measurement techniques commonly applied in biomechanics, an ability to analyze motor skill performance via cinematographic/ computer methodologies and skill in prescriptively communicating results of analysis. Prerequisite: BIOL 011 or BIOL 051 or BIOL 061 or permission of instructor, and a lab fee is required.

HESP 163. Therapeutic Exercise and Rehabilitation. 4 Units.

This course is an application of the theory and principles associated with therapeutic exercise and the application of various rehabilitation techniques and procedures during the course of an athlete's rehabilitation to attain normal range of motion, strength, flexibility, and endurance. Prerequisite: BIOL 071; HESP 133 or permission of instructor, and a lab fee is required.

HESP 173. Health Care Management and Professional Development. 4 Units.

This course is an in-depth study of the management of health care organizations related to finances, facilities, equipment, organizations structures, medical/insurance records, risk management, human relations, and personnel. Practical and conceptual skills are taught to help students focus on more efficient health care delivery. Also covered is the development of leadership skills, future trends in health care management, guidelines for designing effective work groups and managing conflict.

HESP 177. Cardiovascular Physiology. 4 Units.

This course seeks to fulfill two main objectives: 1) to establish a foundational understanding of clinical cardiovascular physiology and 2) to be able to perform and interpret cardiopulmonary exercise tests to examine cardiac, metabolic and respiratory pathology. Prerequisite: HESP 129 and upper division class standing. Lab fee required.

HESP 179. Introduction to Research. 4 Units.

This course covers the rationale for and status of professional research; research designs and their applicability to students' disciplines; review, critique and synthesis of selected literature; development of research proposal and pretest of instrument.

HESP 180. Epidemiology. 4 Units.

This course is an introduction to the principles and practice of epidemiology. It explores the history, concepts, and methods of epidemiologic investigation. The statistical models taught in this class include the receiver operating characteristic curve, chi-square test, t-test, binary logistic regression, and linear regression. Students will learn to develop research designs that employ these tests and will be able to conduct them to evaluate patient care, quantify risk, and understand the patterns of illness and disease in populations.

HESP 182. Exercise Testing and Prescription. 4 Units.

This course is primarily designed to provide students with the hands-on training and theoretical background to competently assess levels of wellness/fitness in an "apparently healthy" (i.e. low risk) adult population. The topics and skills addressed include health screening protocols/risk stratification, use of Informed Consent documents, as well as measurement protocols for the health-related components of fitness (i.e. cardiorespiratory fitness, muscular fitness, flexibility, body composition). These skills are then used to prescribe lifestyle and/or exercise modifications that result in individual progress toward a desired goal. Prerequisite: HESP 129.

HESP 187. Internship in Health and Exercise Science. 4 Units.

This course provides an opportunity for qualifying students to work in an area of Health and Exercise Science that interests them. Prerequisites: HESP 157, GPA 2.0, no grade below "C-" in major, and approval of course supervisor.

HESP 187F. Internship. 1-4 Units.**HESP 187G. Internship. 1-4 Units.****HESP 189. Practicum: Coaching. 1 or 2 Unit.**

The practicum offers non-classroom experiences in activities related to Sports Sciences, under conditions determined by the appropriate faculty member. HESP 189 represents advanced practicum work involving increased independence and responsibility. Enrollment is limited to eight units maximum of HESP 089/189A, B, C, D, H, J, K offerings and no category within a course may be repeated for credit. A list of specific courses follows. Grading option is Pass/No Credit only.

HESP 189B. Practicum: Athletic Training III. 4 Units.

This is a clinical education course in the field of athletic training. It incorporates an experiential learning environment designed to prepare students for a career in athletic training. Advanced skills are introduced within the daily operations of the athletic training room and in the care of the athletes. Criteria for progression must be met before enrolling in subsequent practicum course. Prerequisite: HESP 089K.

HESP 189C. Practicum: Biomechanics. 2 Units.

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Grading option is Pass/No Credit only.

HESP 189D. Practicum: Exercise Physiology. 2 Units.

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Grading option is Pass/No Credit only.

HESP 189F. Practicum: Coaching. 2 Units.

Students are assigned to an intercollegiate or interscholastic sports team for the semester and participate in practice sessions throughout the specific sport season. Written guidelines are developed cooperatively by the supervisor, coach and student. Prerequisites: HESP 139 and HESP 155.

HESP 189H. Practicum: Sports Law. 2 Units.

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Grading option is Pass/No Credit only.

HESP 189J. Practicum: Kinesiology. 2 Units.

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Prerequisite: HESP 133 with a "C-" or better. Grading option is Pass/No Credit only.

HESP 189K. Practicum: Athletic Training IV. 4 Units.

This is the fourth in a series of four consecutive clinical education courses in the field of Athletic Training. The course incorporates an experiential learning environment designed to prepare students for a career in Athletic Training. Advanced Athletic Training knowledge and skills will also be introduced within the daily operations of the Athletic Training Facility and your Clinical Assignment and in the care of patients. Prerequisite: HESP 189B.

HESP 191. Independent Study. 1-4 Units.**HESP 193. Special Topics. 1-4 Units.****HESP 195. Ethical Issues in Sport. 3 Units.**

The primary goal of this course is to enhance student awareness regarding their values, their evolving moral and ethical codes, and the ways of addressing moral problems. Students examine various ethical theories and questions encountered in the field of Sport Sciences. As part of this course, students need to identify necessary information from various sub-disciplines in order to make professional and ethical decisions. Senior standing.

HESP 197. Independent Research. 1-4 Units.**HESP 200. Advanced Health and Exercise Science Law. 4 Units.**

This course examines legal issues and responsibilities relevant to health and exercise science professionals. This course is divided into two parts. Part I introduce basic concepts of the legal system and reviews general legal principles of tort and contract law. Part II focuses upon specific topics to which legal principles and risk management strategies apply. This course is taught combining lecture, class discussion, a written research project, and experientially based assignments designed to develop the ability to practically apply specific circumstances and facts to the law and risk management planning. In-class oral arguments using relevant case law, review of local facilities and programs, and legal observations in San Joaquin County courtrooms will supplement course content and offer students "hands on" learning opportunities.

HESP 233. Advanced Kinesiology. 4 Units.

This graduate seminar considers the musculoskeletal analysis of human movement, posture, exercise prescription, and rehabilitation. Prerequisite: HESP 133 or permission of instructor. Graduate standing.

HESP 235. Graduate Nutrition/Exercise Metabolism. 4 Units.

Students study the principles of nutrition as they relate to health and participation in sport or physical activity. The course includes calculation of energy needs and expenditures, and the role of carbohydrates, fats, protein, vitamins, minerals, and water in sport and physical activity.

HESP 237. Advanced Sport Psychology. 4 Units.

This course provides a detailed examination of the theories and concepts that explain how the human psyche affects sport performance. Particular emphasis is given to the application of these concepts for coaches and athletes.

HESP 247. Advanced Exercise Physiology. 4 Units.

This course is an advanced study of physiological responses to exercise with emphasis on laboratory methods and procedures for testing and demonstrating these responses for research application. Lab fee is required. Prerequisites: HESP 147 and permission of the instructor.

HESP 248. Applied and Clinical Physiology. 4 Units.

This course is designed to study the fundamental principles of exercise testing and interpretation for high risk, healthy, and athletic populations. The course is structured to focus on the cardiovascular, metabolic, and pulmonary responses to aerobic exercise and implications for designing training programs to enhance health, fitness, and performance. This course serves as a foundation for clinical exercise science and the use of exercise testing in the study of cardiac, metabolic and respiratory pathology.

HESP 253. Advanced Adapted Physical Education. 4 Units.

This course provides the culminating learning experience for those teaching credential candidates who are completing the waiver program with an emphasis in adapted physical education. Lab fee required.

HESP 255. Advanced Motor Learning. 4 Units.

This graduate course examines both the information processing and dynamical systems approaches to the study of human motor behavior and skill acquisition. Content is theoretically and research based with a behavioral emphasis. Topics covered include: variability and motor control, visual control of action, the role of reflexes, task interference, limitations in information processing, effects of stress on performance, and the Schema theory. It is intended to provide students with an advanced understanding of the conceptual, functional properties of the motor system and human motor performance and their application to teaching, coaching, industrial and therapeutic settings.

HESP 257. The Clinician in Health and Exercise Science. 4 Units.

This course offers students an opportunity to integrate academic, experiential, and career interests. Each student will: (1) observe at least one carefully selected clinical site throughout the term that is relevant to individual professional/educational interests or research reports that address career options in HESP (if observation sites are unavailable) and (2) research a narrowly defined issue relevant to HES. This course is intended to enhance professional development through experiential learning, continue the development of research skills, advance academic knowledge, and address educational priorities. Students should complete the course with a better understanding of at least one career option within the broad field of health and exercise science and its related research issues.

HESP 261. Advanced Biomechanics of Sport. 4 Units.

This course is an advanced study of mechanical principles which influence human movement. Both non-cinematographic and cinematographic/videographic techniques are used to analyze and evaluate motor skills and errors in performance and critical evaluation of current research findings in biomechanics. Lab fee required. Prerequisite: an undergraduate course in kinesiology or biomechanics or permission of instructor.

HESP 279. Research Methods in Health and Exercise Science. 4 Units.

This in-depth evaluation of the various methods used in the disciplines of health and exercise sciences, includes experimental, descriptive, qualitative and historical approaches. Students learn the means of selecting a research problem and planning its solution as well as important considerations to regard in reviewing the literature. The course also includes an overview of proper form and style in research writing. Student must complete a fully developed Research Proposal as part of this course. Prerequisites: a course in statistics & Graduate standing.

HESP 287. Advanced Internship: Sport Medicine. 4 Units.

This course provides an opportunity for qualifying students to work in an area of sports medicine that interests them. Prerequisites: HESP 257 with a "C" or better and permission of instructor. Graduate standing. Grading option is Pass/No Credit only.

HESP 289B. Advanced Practicum: Coaching. 2-4 Units.

This practicum offers non-classroom experiences in activities related to Sports Medicine, under conditions determined by the appropriate faculty member. HESP 189 represents advanced practicum work that involves increased independence and responsibility. Enrollment is limited to six units maximum of HESP 089/189A, B, C, D offerings and no category within a course may be repeated for credit. Grading option is Pass/No Credit only.

HESP 291. Independent Study. 1-4 Units.

HESP 293. Special Topics. 3 or 4 Units.

HESP 297. Independent Research. 1-4 Units.

HESP 299. Thesis. 4 Units.

Psychology

<http://www.pacific.edu/Academics/Schools-and-Colleges/College-of-the-Pacific/Academics/Departments-and-Programs/Psychology.html>
Phone: (209) 946-2133

Location: Psychology/Communications Building
Matt Normand, Chair
Corey Stocco, Director of Graduate Studies

Program Offered

Master of Arts in Behavioral Psychology

The department offers a graduate program of study that leads to the MA degree in psychology with special strengths in behavior analysis and behavioral psychology.

Mission

The mission of the Master's program in behavioral psychology is to train students to be researchers and clinicians using a scientist-practitioner model. Through a combination of coursework and practical experiences, we provide training that spans the domains of behavior analysis: the experimental analysis of behavior, applied behavior analysis, and service delivery. We have assumed this mission because we believe the solutions to many problems of great social significance require professionals who are engaged with the science and ethics of behavior analysis throughout their careers.

All students:

- take the same courses and receive formal academic training in behavior analytic principles and techniques.
- earn their funding through supervised work in applied settings or through teaching assistantships (see explanation below).
- are required to engage in research throughout their graduate work and to conduct an empirical thesis
- are provided with research mentorship and supervision.

The Association for Behavior Analysis International (ABAI) has verified that our course sequence meets the coursework requirements for eligibility to take the Behavior Analyst Certification Board (BACB)® exam. We also provide supervised clinical experience which meets the BACB® Fieldwork requirements.

Our students have a high rate of sitting for and passing the BACB® exam. Doctoral preparation students have a high rate of being accepted into quality doctoral programs. A list of former graduate students and their current employment or academic placements upon graduating our program is available upon request.

Answers to FAQs can be downloaded here (http://catalog.pacific.edu/stocktongraduate/collegeofthepacific/psychology/FAQ_MA_program_Pacific.pdf)

The program prepares students for:

1) Sitting for the Behavior Analyst Certification Board® exam (www.bacb.com) and subsequent employment in settings where applied behavior analysis is used. Students seeking this option typically earn their funding through supervised clinical experience.

2) Applying to PhD programs in behavior analysis. Students seeking this option also typically earn their funding through supervised clinical experience which meets the BACB® Fieldwork requirements.

Supervised clinical experience is available in many settings including homes, schools, care homes, and treatment centers, and include working with typically developing children, children diagnosed with developmental disabilities and/or autism spectrum disorders, and adults diagnosed with developmental disabilities or mental illnesses. All students are supervised by masters-level BCBA's within our program.

3) Applying to PhD programs in behaviorally-oriented clinical/counseling psychology. Students seeking this option typically earn their funding through a teaching assistantship.

Clinical Skills Development

Students should be able to demonstrate clinical skills and the ability to apply knowledge and research to clinical problems. Students are evaluated on the following (based on the BACB® requirements).

1. Professionalism and Interpersonal Skills
2. Clinical Judgement
3. Written Skills

Professional Skills Development

Students should be able to independently articulate appropriate, reasonable, and achievable goals for their academic development as evaluated by faculty advisor.

Student Self-Regulation of Learning

Students should be able to:

1. Propose their thesis no later than their fourth semester
2. Defend their thesis no later than their third December (i.e., fifth semester)
3. Graduate within 3 years of entering the program
4. Gain admittance into a doctoral program, pass the BACB® exam, and/or obtain employment commensurate with their training upon graduating (depending on the goals of the student).

Master of Arts in Psychology

Students must complete a minimum of 30 units with a Pacific cumulative grade point average of 3.0 in order to earn the master of arts in psychology.

Minimum 28 units, including each of these required courses:

PSYC 207	Psychology of Learning	4
PSYC 251	Behavioral Treatment/Applications	4
PSYC 258	Behavioral Assessment	4
PSYC 262	Ethical Behavior	4
PSYC 278	Controversial Treatments in Applied Settings	4
PSYC 283	Research Design	4

PSYC 299	Thesis	2
		or
		4
Select two units from the following:		2
PSYC 285E	Personnel Supervision and Management I	
PSYC 285F	Personnel Supervision and Management II	
PSYC 297	Graduate Independent Research	

Notes: 1) Students are expected to spend four semesters and one summer in residence in Stockton as part of completing the program. 2) All students must complete a one year research apprenticeship with the same faculty research mentor during their first year. During their second year, students may continue with the same faculty mentor, change faculty mentors, or remain with the same faculty mentor and join additional research teams. 3) Registration for Psyc297 and Psyc285e/Psyc285f is by instructor permission and is based on students' performance during their first year.

Psychology Courses

PSYC 101. Research Methods and Statistics in Psychology I. 5 Units.

This course is the first course in a two-course sequence required for the psychology major. This course will teach the student how to design, complete, analyze, interpret, and report empirical research used to test hypotheses derived from psychological theory or its application, and to be able to critically evaluate scientific research produced by others. Prerequisite: Fundamental Math Skills requirement. (GE3B)

PSYC 102. Research Methods and Statistics in Psychology II. 5 Units.

This course is the second course in a two-course sequence required for the psychology major. This course will teach you how to design, complete, analyze, interpret, and report empirical research used to test hypotheses derived from psychological theory or its application, and to be able to critically evaluate scientific research produced by others. Prerequisite: PSYC 101 with a "C-" or higher.

PSYC 115. Advanced Lab in Cognitive Psychology. 4 Units.

This advanced lab will focus on more in-depth exploration of a specific topic area within the field of Cognitive Psychology. The course will include strong research/applied component that will help students get more hands on feel for research and/or application of the concepts within the field. Possible topics include Memory, Thinking Fast and Slow, or other topics. Prerequisites: PSYC 015, PSYC 11102 with a C- or better.

PSYC 117. Advanced Lab in Clinical Psychology. 4 Units.

This advanced lab will focus on a more in-depth exploration of a specific topic area within the field of Clinical Psychology. The course will include a strong research/applied component that will help students get more hands on feel for research and/or application of the concepts Psychology, Testing and Assessment, or other topics. Prerequisites: PSYC 017, PSYC 053, PSYC 102 with a C- or better, or permission of instructor.

PSYC 118. Advanced Lab in Child Clinical Psychology. 4 Units.

This lab is a more in depth look at topics within the field of clinical child psychology. Each time the course is taught, a specific topic of study such as parenting, child mental health, etc. will be the focus. The course relies heavily on becoming aware of the available research within the field of Clinical Child Psychology as well as more effectively accessing and understanding research in general. Experiential opportunities will be included. Prerequisites: PSYC 017, PSYC 102 with a "C-" or better.

PSYC 125. History and Systems of Psychology. 4 Units.

This course traces the development of "modern psychology" from its birth in early philosophy to its founding as an independent discipline in the late 1800s to its current status with an emphasis on modern behaviorism and cognitive psychology as the two dominant theoretical systems in psychology. In addition, other modern developments such as evolutionary psychology and cognitive neuroscience are discussed. The course focuses on specific content areas and ideas in psychology and the individuals who are most credited with their development.

PSYC 129. Advanced Lab in Developmental Psychology. 4 Units.

This advanced lab will focus on a more in-depth exploration of a specific topic area within the field of Developmental Psychology. The course will include a strong research/ applied component that will help students get a more hands on feels for research and/ or application of the concepts within the field. Possible topics include The Study of Infants, Psychology of Aging, Cognitive Aging, or other topics. Prerequisites: PSYC 029, PSYC 102 with a C- or better. (DVSY, ETHC)

PSYC 153. Advanced Lab in Behavioral Psychology. 4 Units.

This advanced lab will focus more in-depth exploration of a specific topic area within the field of Behavioral Psychology. The course will include a strong research/ applied component that will help students get a more hands on feel for research and/or application of the concepts within the field. Possible topics may include Behavioral Economics, Behavioral Approaches to Common Childhood Problems, the Power of Habit, or other topics. Prerequisites: PSYC 053, PSYC 102 with a C- or better.

PSYC 158. Behavioral Assessment. 4 Units.

An overview of behavioral assessment techniques is examined. Specific topics include data collection, inter-observer agreement, social validity, treatment integrity, functional assessment, stimulus preference assessment, indirect assessment techniques, and functional analysis procedures. Prerequisites: PSYC 053 and permission of instructor.

PSYC 162. Ethical Behavior. 4 Units.

This course will cover professional conduct and ethical behavior within the broad discipline of psychology, as well as the specific ethical and professional guidelines for the Behavior Analysis Certification Board (BACB®). This course addresses ethical decision-making, regulatory standards, and professional behavior in assessment, treatment, and research, in a variety of settings. Although this course will encompass a variety of disciplines and settings within psychology, primary attention will be given to those disciplines intersecting with the practice of applied behavior analysis and on those settings in which behavior analysts in practice are most likely to operate. Topics include accountability, confidentiality and informed consent, quality of services, quality of life, emergency management, research and academic settings, professional collaborations, boundaries, cultural competence, and ethical safeguards. Prerequisites: Junior standing or higher and permission of the instructor.

PSYC 169. Advanced Lab in Social Psychology. 4 Units.

This advanced lab will focus on a more in-depth exploration of a specific topic area within the field of Social Psychology. The course will include a strong research/applied component that will help students get a more hands on feel for research and/ or application of the concepts within the field. Possible topics may include Social Influence, Conformity, or other topics. Prerequisites: PSYC 069, PSYC 102 with a C- or better.

PSYC 183. Research Design. 4 Units.

This course is the design and analysis of research using single subject and group designs. Prerequisite: PSYC 105 and permission of instructor.

PSYC 187. Internship. 1-4 Units.

This internship course gives experiences in a work setting and is contracted on an individual basis. PSYC 187 represents advanced internship work that involves increased independence and responsibility. Students may register for only one course listed below in any semester and may receive no more than four units of credit for any of these courses. Pass/no credit is the only grading.

PSYC 189. Practicum. 4 Units.

The practicum offers non-classroom experiences in activities related to the curriculum under conditions that is determined by the appropriate faculty member. PSYC 189 represents advanced practicum work which involves increased independence and responsibility. Students may register for only one course listed below in any semester and may receive no more than four units of credit for any of these courses. Pass/no credit is the only grading.

PSYC 189A. Applied Psychology Practicum. 4 Units.

Students will acquire skills necessary to the application of principles of general psychology to solve personal, organizational and social problems while serving as assistants to faculty and professional psychologists.

PSYC 191. Independent Study. 1-4 Units.**PSYC 195. Seminar. 4 Units.****PSYC 197. Independent Research. 1-4 Units.****PSYC 207. Psychology of Learning. 4 Units.**

This course focuses on the scientific investigation of learning and behavior. Both experimental and related theoretical developments are considered, as well as applications of the basic principles of learning to issues of social significance.

PSYC 251. Behavioral Treatment/Applications. 4 Units.

This course focuses on the application of behavior analytic principles and methods in applied settings, with an emphasis on behavior change procedures, maintenance and generalization of behavior change, and emergency interventions. Topics addressed include the definition and characteristics of applied behavior analysis, selection and evaluation of intervention strategies, measurement of behavior, display and interpretation of behavioral data, and behavioral assessment. Additionally, basic behavioral principles, single-case experimental design, and ethical issues are discussed in the context of behavioral assessment and intervention. Prerequisite: Open only to graduate students in the psychology major.

PSYC 258. Behavioral Assessment. 4 Units.

Students study an overview of behavioral assessment techniques is examined. Specific topics covered include data collection, inter-observer agreement, social validity, treatment integrity, functional assessment, stimulus preference assessment, indirect assessment techniques, and functional analysis procedures.

PSYC 262. Ethical Behavior. 4 Units.

This course will cover professional conduct and ethical behavior with the broad discipline of psychology, as well as the specific ethical and professional guidelines for the Behavior Analysis Certificate (BACB®). This course addresses ethical decision-making, regulatory standards, and professional behavior in assessment, treatment, and research, in a variety of settings. Although this course will encompass a variety of disciplines and settings within psychology, primary attention will be given to those disciplines intersecting with the practice of applied behavior analysis and on those settings in which behavior analysts in practice are most likely to operate. Topics include accountability, confidentiality and informed consent, quality of services, quality of life, emergency management, research and academic settings, professional collaborations, boundaries, cultural competence, and ethical safeguards. Prerequisites: Psychology major and graduate student status.

PSYC 278. Controversial Treatments in Applied Settings. 4 Units.

This graduate seminar covers the varieties and consequences of pseudoscience in the helping professions and how to avoid being influenced by them. The helping professions comprise a significant industry in the United States. This includes medicine, psychology (including behavior analysis), psychiatry, social work, and other forms of counseling. It includes community mental health centers, and other venues such as mental hospitals, crisis centers, and schools. Each profession has a code of ethics that calls on professionals to help clients, to avoid harm, to honor informed consent requirements and promote independence. Professional codes of ethics call on professionals to draw on practice-related research findings. What do we find if we look closely at their everyday behavior? To what extent do professionals and researchers honor obligations described in such codes of ethics? Although this course will encompass a variety of disciplines and settings, primary attention will be given to those disciplines intersecting the practice of applied behavior analysis and on those settings in which behavior analysts in practice are most likely to operate. Prerequisites: Psychology major and graduate student status.

PSYC 283. Research Design. 4 Units.

Students learn the design and analysis of research using single subject and group designs.

PSYC 285E. Personnel Supervision and Management I. 0.5 or 1 Units.

This course focuses on personnel supervision and management. Students will learn how to train others to design and implement behavioral assessments and interventions and oversee the implementation of behavioral programs by others. Students will also attend behavioral program planning meetings and review program-relevant literature. Prerequisites: Instructor permission.

PSYC 285F. Personnel Supervision and Management II. 0.5 or 1 Units.

This course focuses on personnel supervision and management. Students will learn how to train others to design and implement behavioral assessments and interventions and oversee the implementation of behavioral programs by others. Students will also attend behavioral program planning meetings and review program-relevant literature. Prerequisites: Instructor permission.

PSYC 287. Graduate Internship. 1-4 Units.**PSYC 289. Practicum. 1-4 Units.****PSYC 291. Graduate Independent Study. 1-4 Units.****PSYC 297. Graduate Independent Research. 1-4 Units.**

Pass/No Credit grading only.

PSYC 299. Thesis. 2 or 4 Units.

This course requires students, under the guidance and supervision of a designated faculty research advisor, to independently plan, organize, conduct, evaluate and write-up an original research project as partial fulfillment of the MA degree. Permission of instructor. Pass/No Credit grading only.

Conservatory of Music

<http://www.pacific.edu/conservatory/>

Phone: (209) 946-2415

Location: Faye Spanos Concert Hall

Peter Witte, Dean

Nicolasa Kuster, Associate Dean

Programs Offered

Master of Music in Music Education

Master of Arts in Music Therapy

The Conservatory of Music offers graduate degrees in music education and music therapy: Master of Music in Music Education and Master of Arts in Music Therapy. Additionally, the Master of Education is available through the Benerd College (formerly Benerd School of Education).

The Conservatory of Music graduate programs give students individual faculty attention and opportunities to work with experts in their field.

Graduate students in the Conservatory of Music take a range of coursework designed to enhance their musicianship and research skills. They develop advanced skills in music therapy, conducting, pedagogy, or other areas of music specialization depending on individual career goals.

Music education degrees are designed for those with a previous degree/credential in music; in general, the Master of Music includes more coursework in music, while the Master of Education includes more education courses. Applicants who have not attained a music education degree/teaching credential previously are expected to complete the credential program as part of earning their graduate degree. Building on previous music and teaching experiences, the education programs are individualized and lead to a creative, productive career in teaching music, pre-K through college.

The Master of Arts in Music Therapy offers a choice of two tracks of study (research and clinical) that support (1) preparation for eventual entry into teaching and research careers or (2) development of advanced clinical, administrative, and program development skills.

Comprehensive Examination

At the conclusion of the Master's programs, all students are expected to pass a comprehensive written and/or oral examination/thesis defense on all work covered during their graduate study at University of the Pacific.

Admission Requirements

Admission to any graduate program in music at University of the Pacific is based upon both academic qualifications and musicianship, including overt musical behavior as demonstrated in performance and listening. Academic considerations for the entering Master's student, regardless of major, are discussed in earlier pages of this catalog under Admission.

Music Education

- A Bachelor's Degree in Music.
- General GRE (Not required for applicants with a GPA of 3.5 or higher)
- Resume
- Personal Transcripts
- Two letters of recommendation
- Audition (live or video recording)
- For international students, the Test of English as a Foreign Language (TOEFL) (<https://www.toeflgoanywhere.org/>) or International English Language Testing System (IELTS) (<https://www.ielts.org/en-us/>) is required.
- Credential candidates must apply for and meet the admission procedures and standards of the Credential Program of Benerd College during the first term of attendance.

Music Therapy

• Admission Requirements

- Bachelor's degree in music or music therapy related field
- General GRE (<https://www.ets.org/gre/>) (Not required for applicants with a GPA of 3.5 or higher)
- Resume

- Personal statement
- Official transcripts
- Three letters of recommendation
- Musical Skills Assessment:
 - a. Perform **two** contrasting pieces on primary instrument/voice.
 - b. Sing one piece from traditional or contemporary musical repertoire with self-accompaniment **on piano** (e.g., popular, jazz, country, musical theater; a lead sheet or sheet music may be used).
 - c. Sing one piece from traditional or contemporary musical repertoire with self-accompaniment **on guitar** (e.g., popular, jazz, country, musical theater; a lead sheet or sheet music may be used).
 - d. Sing one piece **a capella** from memory, drawn from folk, patriotic or children's musical repertoires (e.g., *America the Beautiful*, *You Are My Sunshine*, *This Little Light of Mine*).
- For international students, the Test of English as a Foreign Language (TOEFL) (<https://www.toeflgoanywhere.org/>) or International English Language Testing System (IELTS) (<https://www.ielts.org/en-us/>) is required.

For a list of Conservatory of Music faculty go to the following site (<https://music.pacific.edu/music/faculty/>).

Applied Music Courses

MAPP 111A. Advanced Applied Music: Music Education (Euphonium). 1-2 Units.

This course is for upper division music majors who have passed the sophomore concentration examination in their principal instrument or voice. It is required for music education majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 111B. Advanced Applied Music: Music Education (Bassoon). 1-2 Units.

This course is for upper division music majors who have passed the sophomore concentration examination in their principal instrument or voice. It is required for music education majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 111C. Advanced Applied Music: Music Education (Cello). 1-2 Units.

This course is for upper division music majors who have passed the sophomore concentration examination in their principal instrument or voice. It is required for music education majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 111D. Advanced Applied Music: Music Education (Clarinet). 1-2 Units.

This course is for upper division music majors who have passed the sophomore concentration examination in their principal instrument or voice. It is required for music education majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 111E. Advanced Applied Music: Music Education (Flute). 1-2 Units.

This course is for upper division music majors who have passed the sophomore concentration examination in their principal instrument or voice. It is required for music education majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112D. Advanced Applied Music: Performance (Clarinet). 1-4 Units.

This course is for upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. It is required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112E. Advanced Applied Music: Performance (Flute). 1-4 Units.

This course is for upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. It is required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112F. Advanced Applied Music: Performance (Horn). 1-4 Units.

This course is for upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. It is required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112G. Advanced Applied Music: Performance (Guitar). 1-4 Units.

This course is for upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. It is required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112H. Advanced Applied Music: Performance (Harp). 1-4 Units.

This course is for upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. It is required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112J. Advanced Applied Music: Performance (Harpichord). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112K. Advanced Applied Music: Performance (Oboe). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112L. Advanced Applied Music: Performance (Organ). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112M. Advanced Applied Music: Performance (Percussion). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112N. Advanced Applied Music: Performance (Piano). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112P. Advanced Applied Music: Performance (Saxophone). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112Q. Advanced Applied Music: Performance (Bass). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112R. Advanced Applied Music: Performance (Trombone). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112S. Advanced Applied Music: Performance (Trumpet). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112T. Advanced Applied Music: Performance (Tuba). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112U. Advanced Applied Music: Performance (Viola). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112V. Advanced Applied Music: Performance (Violin). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112W. Advanced Applied Music: Performance (Voice). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 112X. Advanced Applied Music: Performance (Saxophone). 1-4 Units.

For upper division music majors who have passed the sophomore applied major examination in their principal instrument or voice. Required for performance majors. Enrollment in applied music requires an applied music fee per unit.

MAPP 121. Vocal Coaching. 1 Unit.

This course helps students prepare songs and arias for public performance. Emphasis is on musical and dramatic style and interpretation and the course includes private and group lessons. There is an applied music fee. Permission of instructor.

MAPP 191. Independent Study. 1-2 Units.**MAPP 210A. Applied Music: Euphonium. 1-2 Units.**

By audition only.

MAPP 210B. Applied Music: Bassoon. 1-2 Units.

By audition only.

MAPP 210C. Applied Music: Cello. 1-2 Units.

By audition only.

MAPP 210D. Applied Music: Clarinet. 1-2 Units.

By audition only.

MAPP 210E. Applied Music: Flute. 1-2 Units.

By audition only.

MAPP 210F. Applied Music: French Horn. 1-2 Units.

By audition only.

MAPP 210G. Applied Music: Guitar. 1-2 Units.

By audition only.

MAPP 210H. Applied Music: Harp. 1-2 Units.

By audition only.

MAPP 210J. Applied Music: Harpsichord. 1-2 Units.

By audition only.

MAPP 210K. Applied Music: Oboe. 1-2 Units.

MAPP 210L. Applied Music: Organ. 1-2 Units.

By audition only.

MAPP 210M. Applied Music: Percussion. 1-2 Units.

By audition only.

MAPP 210N. Applied Music: Piano. 1-2 Units.

By audition only.

MAPP 210P. Applied Music: Saxophone. 1-2 Units.

By audition only.

MAPP 210Q. Applied Music: String Bass. 1-2 Units.

By audition only.

MAPP 210R. Applied Music: Trombone. 1-2 Units.

By audition only.

MAPP 210S. Applied Music: Trumpet/Cornet. 1-2 Units.

By audition only.

MAPP 210T. Applied Music: Tuba. 1-2 Units.

By audition only.

MAPP 210U. Applied Music: Viola. 1-2 Units.

By audition only.

MAPP 210V. Applied Music: Violin. 1-2 Units.

By audition only.

MAPP 210W. Applied Music: Voice. 1-2 Units.

By audition only.

MAPP 210X. Applied Music: Saxophone. 1-2 Units.

By audition only.

MAPP 291. Graduate Independent Study. 1-4 Units.

Music Composition Courses

MCOM 108. Counterpoint. 3 Units.

This course focuses on the study of counterpoint through the ages: the linear modal counterpoint from the Renaissance with an emphasis on Palestrina and Lassus' music and the vertical implications of tonal counterpoint with an emphasis on J.S. Bach's Two and Three parts Inventions. Prerequisite: MCOM 033.

MCOM 109. Advanced Orchestration. 3 Units.

This course focuses on orchestration techniques from the first half of the 20th Century, and new performance practices. This is accomplished through orchestra analysis and writing exercises that include a reading session with the orchestra.

MCOM 112. Composition- Computer Music. 2 Units.

Students study private composition in computer music within the Conservatory Computer Studio for Music Composition.

MCOM 113. Advanced Analysis. 3 Units.

Students explore advanced topics in music analysis that includes extensive study of Schenkerian analysis. Prerequisites: MCOM 032, MCOM 033, MCOM 034, and MCOM 035.

MCOM 118. Music and Video Technology: Performance. 3 Units.

This course will focus on the creation of video and interactive computer music environments for the live performance of technology based music and video. Max/MSP/Jitter serves as the primary software for the construction of performance environments. Prerequisite: MCOM 029 or equivalent music technology experience or permission of instructor.

MCOM 124. Composition, Upper-Division. 2 Units.

This course is guided composition for experienced students that leads to the creation of several compositions for instruments and voices. This course may be repeated for credit. The course is for music composition majors, and admission to this upper division course is based on review of students' work at the end of the second year. Prerequisite: MCOM 024 or permission of instructor.

MCOM 126. New Performance Techniques. 1 Unit.

This class focuses on the study of extended acoustical techniques for voice, keyboard, string, woodwinds, brass, and percussion instruments. Specific techniques and appropriate notation are discussed and compositions that utilize these techniques are studied. Prerequisite: MCOM 035.

MCOM 127. Music, Sound, and Film. 2 Units.

In any visual experience from real-life to commercial cinema to sound/image installation, sound plays a significant role in defining the expressive and relational content of the experience. This course explores the use of sound/music in film and experimental art with an emphasis on understanding the complex role sound plays in our experience. Through readings, film viewing, discussion, and analysis, students delve into the thinking of current sound designers, sound artists, and composers. Prerequisite: MCOM 029. (FILM)

MCOM 128. New Approaches to Form. 1 Unit.

In the 20th Century, composers have found it necessary to explore new formal structures that allow them to unify their compositions at all levels. These approaches vary greatly from technical to conceptual. This course pursues the study of formal approaches to compositional organization with an emphasis on the unique problems each one confronts musically. Prerequisite: MCOM 035.

MCOM 129. Non-Western Composing Techniques. 1 Unit.

This course examines the expansion of melodic, rhythmic, harmonic, and timbral composition techniques through the study of music from the Republic of Central Africa, Japan, India and Bali. Prerequisite: MCOM 035.

MCOM 134. Composition: Senior Project. 3 Units.

This course is private instruction/mentoring for the completion of a senior project in music composition. Prerequisite: MCOM 124.

MCOM 140. Hybrid Practice and the Composer-Improviser. 3 Units.

Using a blend of musicological, theoretical, and compositional tools, this course will explore practice within "the Creative Music Continuum" – a cluster of influential artists and ideas wherein a delineation of roles separating composers from performers is blurred or absent, and improvisation figures prominently. Focusing primarily on African-American figures affiliated with the AACM (Association for the Advancement of Creative Musicians) such as Anthony Braxton, Roscoe Mitchell, Wadada Leo Smith, and Nicole Mitchell, we will also explore various intersections with the likes of Pauline Oliveros, Christian Wolff and Du Yun.

MCOM 191. Independent Study. 1-2 Units.

MCOM 194. Composition Senior Recital. 0 Units.

This is a half-recital (+30-45 minutes of music) required for degree completion, organized, managed, and promoted by a Senior composition student, featuring a selection from the works he/she composed during his/her/ tenure in the composition program. Prerequisites: MCOM 124 with a "D" or better. Senior standing.

MCOM 208. Counterpoint. 3 Units.

This course focuses on the study of counterpoint through the ages: the linear modal counterpoint from the Renaissance with an emphasis on Palestrina and Lassus' music and the vertical implications of tonal counterpoint with an emphasis on J.S. Bach's Two and Three parts Inventions.

MCOM 209. Advanced Orchestration. 3 Units.

Course content focuses on orchestration techniques from the first half of the 20th Century, and new performance practices. This study is accomplished through orchestral analysis and writing exercises that include a reading session with the orchestra. Prerequisites: MCOM 032, MCOM 033, MCOM 034, and MCOM 035.

MCOM 211. Advanced Computer Music. 3 Units.

This course is taught in the Conservatory Computer Studio for Music Composition which focuses on the use of sampling/sound design, digital audio recording and editing, automated mixing, and computer manipulation as resources for music composition. An additional project is assigned for those who wish to receive graduate credit. Prerequisites: MCOM 010-017, MCOM 019 or equivalent.

MCOM 212. Composition- Computer Music. 2 Units.

Students study private composition in computer music within the Conservatory Computer Studio for Music Composition.

MCOM 213. Advanced Analysis. 3 Units.

Students examine advanced topics in music analysis that include the extensive study of Schenkerian analysis. Prerequisites: MCOM 032, MCOM 033, MCOM 034, and MCOM 035.

MCOM 291. Graduate Independent Study. 1-4 Units.**MCOM 299. Thesis. 3 Units.****Music Education Courses****MEDU 100. Music for Children. 3 Units.**

This course explores music fundamentals, resources, concepts and activities for the pre-adolescent child. This course is open to non-music majors only, and it is required for multiple subjects credential candidates.

MEDU 101. Woodwind Instruments I. 1 Unit.

Students study the principles of teaching and playing flute and clarinet.

MEDU 102. Woodwind Instruments II. 1 Unit.

Students study the principles of teaching and playing oboe, bassoon and saxophone.

MEDU 103. Brass Instruments I. 1 Unit.

Students study the principles of teaching and playing brass instruments.

MEDU 104. Brass Instruments II. 1 Unit.

Students study the advanced principles of brass instrument teaching.

MEDU 105. Percussion Instruments. 1 Unit.

Students study the principles of teaching and playing percussion instruments.

MEDU 107. String Instruments I. 1 Unit.

Students study the principles of teaching and playing violin and viola.

MEDU 108. String Instruments II. 1 Unit.

Students study the principles of teaching and playing string instruments which include the cello and bass.

MEDU 110. Band Development. 2 Units.

Students examine the teacher's role in instrumental music education which includes concert, marching, jazz band and orchestras in public schools.

MEDU 111. Choral Development. 2 Units.

Students examine the teacher's role in choral music education which includes concepts and techniques for choral ensembles.

MEDU 112. Orchestra Development. 2 Units.

Students examine the teacher's role in orchestras in public schools.

MEDU 113. Laboratory Ensemble. 0.5 Units.

This course offers laboratory experience of music education fieldwork that includes developmentally appropriate class and rehearsal skills, secondary instrument performance, vocal ensemble techniques, planning, and assessment.

MEDU 114. Music in Elementary School. 1 Unit.

Students investigate the role of music within the elementary school and its environment. The course includes 50 hours of laboratory observation/teaching in the elementary schools. Corequisite: MEDU 115.

MEDU 115. Music Experiences, K-6. 2 Units.

This course offers a music specialist approach to materials and techniques that develop music experiences for elementary school children. Corequisite: MEDU 114. Open to music majors only.

MEDU 116. Music in Secondary School. 1 Unit.

Students examine the role of school music in grades 6-12. The course includes 50 hours of laboratory observation/teaching. Corequisite: MEDU 117. Open to music majors only.

MEDU 117. Music Experiences, 7-12. 2 Units.

This course offers a music specialist approach to materials and techniques that develop music experiences in secondary school. Corequisite: MEDU 116. Open to music majors only.

MEDU 118. Advanced Teaching Practicum. 1-3 Units.

This course is supervised practical observation/teaching experiences in both public and private schools. Prerequisites: MEDU 114 and MEDU 116.

MEDU 119. Fieldwork: Music Grades 4-12. 1 Unit.

This course offers fieldwork to accompany 21st century approaches to music education for pre-teens and adolescents with an emphasis on school and community settings. Co-requisite: MEDU 120.

MEDU 120. 21st Century Approaches to Music Education. 2 Units.

This course offers a music specialist approach to contemporary materials and techniques that develop music experiences for pre-teens and adolescents, including performance skills and creative music-making in school and community settings. Co-requisite: MEDU 119.

MEDU 191. Independent Study. 1-4 Units.**MEDU 200. Video Microrehearsal for Music Teaching Candidates. 3 Units.**

Course content includes microrehearsals, seminars, and individual and group viewing sessions to define and develop rehearsal-teaching techniques with video recording as a basic tool. Prerequisites: bachelor's degree in music and permission of Music Education faculty.

MEDU 201. Video Microrehearsal for Experienced Music Teachers. 1-4 Units.

Students study the restructuring of music teaching techniques that use video recording techniques. Other topics of study include microrehearsals, seminars, individual and group viewing sessions, and field application of new procedures. Prerequisites: bachelor's degree in music, two years of full-time music teaching in public schools and permission of instructor.

MEDU 202. Fieldwork in Music Education. 3 Units.

This course offers advanced work in schools. It may include music drama, small ensembles, unique curriculum design as well as large ensembles and class instruction.

MEDU 210. Seminar in Music Education. 2 Units.

This seminar course includes discussion, research and writing related to music education.

MEDU 220. Instrumental Organization, Conducting and Literature. 1-3 Units.

This course offers advanced pursuit of curricular and pedagogical issues in teaching instrumental music.

MEDU 221. Choral Organization, Conducting and Literature. 1-3 Units.

This course offers advanced pursuit of curricular and pedagogical issues in teaching choral music.

MEDU 222. Advanced Problems in Elementary Music Teaching. 1-3 Units.

This course offers advanced pursuit of curricular and pedagogical issues in teaching instrumental music.

MEDU 291. Independent Study. 1-4 Units.**MEDU 293. Special Topics. 1-2 Units.****MEDU 299. Thesis. 3 Units.****MEDU 301. Video Microrehearsal for Experienced Music Teachers. 4 Units.**

Students study the restructuring of music teaching techniques that use video recording techniques. Other topics of study include microrehearsals, seminars, individual and group viewing sessions, and field application of new procedures. A research component is required. Prerequisites: bachelor's degree in music and two years of full-time music teaching in public schools and permission of instructor.

MEDU 310. Seminar in Music Education. 2 Units.

This course includes discussion, research and writing related to music education.

MEDU 311. Philosophy of Music Education. 3 Units.

Students examine the development of individual music education philosophy through the study of history, aesthetics, sociology, psychology and school practice.

MEDU 312. Graduate Research in Music Education. 1-3 Units.**MEDU 313. Graduate Research in Music Education. 1-3 Units.****MEDU 322. Issues in Elementary Music Teaching. 3 Units.****MEDU 391. Graduate Independent Study. 1-3 Units.****MEDU 393. Special Topics. 1-2 Units.**

Music History Courses

MHIS 140. Symphonic Literature. 3 Units.

Students study the history of the symphony from Baroque antecedents to contemporary examples. Prerequisites: MCOM 033, MHIS 011, MHIS 012, or permission of instructor.

MHIS 141. Opera Literature. 3 Units.

Students study the development of opera from 1600 to the present day. Special emphasis is on major operatic works and the relationship of opera to world history. Prerequisites: MCOM 032, MHIS 011, MHIS 012, or permission of instructor.

MHIS 142. Chamber Music Literature. 3 Units.

Students examine the formal and stylistic study of chamber music literature and analyze specific works. Prerequisites: MCOM 032, MCOM 033, MHIS 011, MHIS 012 or permission of instructor.

MHIS 143A. Keyboard Literature I. 3 Units.

Students examine the historical, formal and stylistic study of keyboard literature from 1450 through 1825. Prerequisites: MCOM 032, MCOM 033, MHIS 011, MHIS 012, or permission of instructor.

MHIS 143B. Keyboard Literature II. 3 Units.

Students examine keyboard music from 1825 to present. Prerequisites: MCOM 032, MCOM 033, MHIS 011, MHIS 012, or permission of instructor.

MHIS 144. Vocal Literature. 3 Units.

Students study vocal compositions of major composers with emphasis on 19th and 20th century French and German repertoire. The relationship of poetry and music in the *melodie* and *Lied* is stressed in addition to recital programming. Prerequisites: MCOM 033, MHIS 011, MHIS 012 or permission of instructor.

MHIS 152. Topics in Early Music. 3 Units.

Students study early music topics from before 1700 (medieval, renaissance, or early baroque periods). Sample topics include Renaissance madrigal, medieval chant, 17th century opera, etc. See program director for specific topics in a given semester. This course meets once in four semesters. Prerequisite: MCOM 033, MHIS 011, MHIS 012 or permission of instructor.

MHIS 153. Topics in Eighteenth-Century Music. 3 Units.

Students study music topics from the eighteenth century (high baroque, pre-classical, classical, and pre-romantic styles). Sample topics include the Bach family, Haydn or Mozart, birth of the symphony, etc. See instructor for specific topics in a given semester. This course meets once in four semesters. Prerequisite: MCOM 033, MHIS 011, MHIS 012 or permission of instructor.

MHIS 154. Topics in Nineteenth-Century Music. 3 Units.

Students study music topics from the nineteenth century that cover a broad spectrum of repertory. Students examine common issues of the nineteenth century through the lens of particular repertories, composers, and/or genres, e.g. *Lied* and Song Cycles, Nationalism, or *fin-de-siecle* Vienna. See instructor for specific topics in a given semester. This course meets once in four semesters. Prerequisites: MCOM 033; MHIS 011; MHIS 012 or permission of instructor. MCOM 034 is recommended.

MHIS 155. Topics in Music of the 20th-21st Century. 3 Units.

Students study music topics in music of the 20th and 21st centuries. Sample topics concentrate on specific sub-periods and repertories such as Russian music, music after 1945, etc. This course meets once in four semesters. Prerequisites: MCOM 033; MHIS 011; MHIS 012 or permission of instructor. MCOM 034 is recommended.

MHIS 158. Advanced History of Jazz. 3 Units.

This course is a comprehensive study of jazz styles and performers through intelligent listening and historical research. Realizing jazz as an art form created by African-Americans, this course investigates issues that concern race, ethnicity, and social justice. Course content involves connections to slavery, Civil and World Wars, segregation, and the musical response of African-Americans. The course includes analysis of jazz compositions, live performance critiques, album reviews, artist papers, and a research project involving the Brubeck Collection. This course is designated for music students with junior or senior standing. Prerequisites: MCOM 032 and MHIS 012 or permission of instructor.

MHIS 160. American Music. 3 Units.

Students study the music in America from colonial times to the present. The focus is primarily Western music traditions by interacting with African-American and Native American musical traditions. Covers development of popular music traditions with respect to their effects on American musical composition and reception. Prerequisites: MCOM 033; MHIS 011; MHIS 012 or permission of the instructor.

MHIS 191. Independent Study. 1-3 Units.**MHIS 193. Special Topics. 3 Units.****MHIS 197. Research in Music History. 1-4 Units.**

Permission of instructor. Senior standing.

MHIS 250. Medieval Music. 3 Units.

Students study topics in music history to c. 1450. Emphasis is on research methodology. Prerequisites: MCOM 010-017, MHIS 011, 012, 013, or permission of instructor.

MHIS 251. Music in the Renaissance. 3 Units.

Students study topics in the history of the music of the 15th and 16th centuries. Prerequisites: MCOM 010-17, MHIS 011, 012, 013, or permission of instructor.

MHIS 252. Music in the Baroque. 3 Units.

Students study topics in music history from c. 1580-1750. Prerequisites: MCOM 010-017, MHIS 011, 012, 013, or permission of instructor.

MHIS 253. Studies in the Classical Period. 3 Units.

Students study music from c. 1750-1810 with stress on evolution of style and historical factors which relate to this evolution. Prerequisites: MCOM 010-017, MHIS 011, 012, 013, or permission of instructor.

MHIS 254. Studies in the Romantic Period. 3 Units.

Students study music of the 19th century and its relationship to other art forms and historical developments. Emphasis is on research methodology. Prerequisites: MCOM 010-017, MHIS 011, 012, 013, or permission of the instructor.

MHIS 291. Graduate Independent Study. 1-3 Units.**MHIS 293. Special Topics. 3 Units.****Music Management Courses****MMGT 100. Music Publishing. 3 Units.**

Students will learn key creative and business functions related to music publishing, copyright, licensing, song marketing activities, songwriter agreements, writer/publisher splits, as well as the functions and responsibilities of U.S. music publishing companies. Students will gain skills needed to work either in the music publishing field directly, or within the "buyer" fields that conduct business with music publishers (such as TV/Film studios or record companies). Students will have a working knowledge of the publishing industry processes and be capable of interfacing with managers, lawyers, accountants, marketing representatives and other team members to manage a song catalog.

MMGT 102. Creativity and Innovation: Developing a Creative Mindset. 3 Units.

Through a series of interactive games, challenges, collaborative projects and problem-solving activities, students will develop a more creative mindset and explore new approaches to problem solving (including Design Thinking, Initial Fast Failure, and TR12 theory), fostering resourcefulness, adaptability, self-confidence and out-of-the-box thinking - preparing them to adapt more easily to change, disruption and uncertainty in the labor market and "gig" economy.

MMGT 106. Sound Recording Fundamentals. 3 Units.

This course introduces students to basic audio techniques applicable to recording sound. This course is a combination of lecture, lab sessions and independent studio projects which provides a basic understanding of how audio is captured, stored and manipulated in the recording industry. **(FILM)**

MMGT 107. Performing Arts Administration. 3 Units.

This course is a practical approach to management and business issues that affect arts organizations. Topics include program planning, budget development, fund-raising, community relationships and concert promotion and production.

MMGT 108. Artist Management. 3 Units.

This course introduces students to the roles and responsibilities of a personal manager for a recording artist. Through reading, discussion, project-based work and taking on a working artist to advise and "manage" during the term, students have the opportunity to learn first-hand about the nature of the work of the artist manager and how to plan and execute a project for an artist. Prerequisite: MMGT 011 or permission of the instructor.

MMGT 109. Beyond Talent: Managing Performance Career. 2 Units.

This course provides students intending a career as a performer or artist with the knowledge and skills to help manage their career and image. This course combines readings, workshops, activities, and interviewing successful artists while students develop a basic promotional kit and career plan. Prerequisite: Permission of instructor.

MMGT 111. Music Industry Analysis. 4 Units.

Using reading, research, and discussion, students investigate the evolution of the American popular music industry during the last century. Social, cultural, business and technological changes are considered. The course emphasizes critical thinking, forming and defending opinions, and clearly presenting written and oral arguments that support student-developed theses which relate to a variety of eras and themes. Coursework includes a substantial research project on a topic of the student's own choosing. Prerequisite: MMGT 011 or permission of instructor. Junior standing. **(DVSY)**

MMGT 120. Media Production. 4 Units.

A laboratory class in which student teams learn to capture, edit, and publish live events such as concerts, recitals, lectures, as well as community and regional music events. Students will become familiar with audio, video and streaming tools, as well as the protocol and processes of working with various stakeholders to accomplish the course learning objectives. Prerequisites: Sophomore Standing.

MMGT 121. Media Promotion. 4 Units.

This is a hands-on lab class which students learn to promote designated projects for clients, using various means including paid, owned, and earned digital media. Students will learn about relevant forms of social media to accomplish the course learning objectives which primarily focus on audience-building, data analytics, measurement and evaluation of the effectiveness of various tactics and strategy used in media promotion. Class may be audited. Prerequisites: Sophomore standing.

MMGT 130. Popular Songwriting. 3 Units.

Students will gain a fundamental understanding of how songs are written, co-written and produced. Genre-specific songwriting and production conventions will also be addressed. Study of popular song structure, lyrics, melodic and other musical elements are included. Prerequisite: MMGT 009 or permission of instructor.

MMGT 135. Digital Music Synthesis. 3 Units.

An in-depth look at the creative music potential of the Digital Audio Workstation. It offers students a comprehensive understanding of music synthesis when working in a DAW environment. Using Logic Pro X and Ableton Live applications, this hands-on project-based course will focus on MIDI sequencing and programming, sound and instrument plug-in design, effect plug-in processing and sound shaping, and audio sample warping and clip manipulation. Prerequisites: MMGT 035 or permission of instructor.

MMGT 140. Music Products Management. 3 Units.

This course introduces students to the inner workings of the operations, sales and financial aspects of the music products industry. Course work includes case studies, lab sessions at a music retailer, development of a retail store start-up plan and site visits to leading regional music products firms.

MMGT 153. Entertainment Law. 4 Units.

Students study all aspects of legal relationships and rights of problems in films, television, music and records. Prerequisites: BUSI 053 and MMGT 011 or permission of instructor. Junior standing. (PLAW)

MMGT 160. Recording Studio Production. 2 Units.

This course provides students an opportunity to work independently and as part of a group learning about acoustical sound recording and digital production techniques. Classes develop sound recording and aural acuity relevant to the production of high quality music recordings. Course may be taken a total of three times for credit. Prerequisites: MMGT 106 with a grade of 'B' or better or permission of instructor.

MMGT 170. Topical Seminars in Music Industry Studies. 1-3 Units.

Rotating series of seminars that study various segments of the music industry. Past seminars have included topics such as concert production/promotion, music licensing and supervision, and live sound engineering.

MMGT 175. Music Royalty Analysis. 3 Units.

Students will learn financial literacy unique to the music industry. This includes, but is not limited to: Learning to read music royalty statements, compute basic and advanced royalty problems, analyze past royalty earnings for music copyright asset sales and purchases and analyze specific managerial financial situations unique to the music industry. Students will also create a financial management portfolio in compliance with the U.S. Small Business Administration guidelines.

MMGT 180. Senior Project Proposal. 1 Unit.

Students will prepare a comprehensive project proposal addressing an industry-related topic, problem or issue of concern to the student, which directly relates to their intended career path. Proposal must meet with faculty approval prior to end of semester. Graded on a Pass/No Credit basis only. Prerequisite: Junior standing.

MMGT 181. Senior Music Project Proposal. 1 Unit.

Students will prepare a comprehensive project proposal, which will demonstrate their musical development and abilities through recorded media or live performance. Project proposal should directly relate to student's intended career path. Proposal must meet with faculty approval prior to end of semester. Prerequisite: Junior standing.

MMGT 185. Senior Project. 1 Unit.

Students will complete and present a senior project that is based on their approved proposal from MMGT 180. Students will deliver both written and oral presentations in a public forum. Students receive a letter grade based on their overall semester's work as well as the quality and clarity of their final project. Prerequisites: MMGT 180, Senior Standing.

MMGT 186. Senior Music Project. 1 Unit.

Students will complete and present a senior project that is based on their approved proposal from MMGT 181. Students will either perform a newly created musical work or present a newly created sound recording that they have been responsible for conceiving and completing in a public forum. Prerequisites: MMGT 181, Senior Standing.

MMGT 187. Music Management Internship. 1-4 Units.

This course is an opportunity for qualifying students to work in an area of the music industry that interests them. The course is coordinated with the Pacific Career Resource Center. Prerequisite: Successful completion of two courses in Music Management. Permission of faculty adviser. Graded Pass/No Credit.

MMGT 189. Practicum. 4 Units.**MMGT 190A. Portfolio Review II. 0 Units.**

Music Industry and Music Management majors prepare an ePortfolio over the course of his/her study containing signature assignments from specified courses as well as other work products relevant to measuring progress toward attaining program learning outcomes as well as knowledge in the students' area of focus. This course is a milestone review, which occur in each semester of junior year. Each student meets bi-monthly with a faculty advisor to determine appropriate quality and relevance of portfolio contents and to receive feedback on how to maximize its impact. This course is graded on a Pass/No Credit basis only. Prerequisite: MMGT 090, Junior standing.

MMGT 190B. Portfolio Review III. 0 Units.

Music Industry and Music Management majors prepare an ePortfolio over the course of his/her study containing signature assignments from specified courses as well as other work products relevant to measuring progress toward attaining program learning outcomes as well as knowledge in the students' area of focus. This course is a milestone review, which occur in each semester of the junior year. Each student meets bi-monthly with a faculty advisor to determine appropriate quality and relevance of portfolio contents and to receive feedback on how to maximize its impact. This course is graded on a Pass/No Credit basis only. Prerequisite: MMGT 190A, Junior standing.

MMGT 190C. Portfolio Presentation. 1 Unit.

Music Industry Studies and Music Management majors prepare an ePortfolio over the course of his/her study containing signature assignments from specified courses as well as capstone assignments and other work products relevant to measuring progress toward attaining program learning outcomes as well as knowledge in the students' area of focus. This course is the final portfolio, which also incorporates a student presentation that may be videotaped and added to the students' portfolio. Each student meets bi-monthly with a faculty advisor to determine appropriate quality and relevance of portfolio contents and to finalize their presentation. This course is graded on a pass/no credit basis only. Prerequisite: MMGT 190B, Senior Standing.

MMGT 191. Independent Study. 1-2 Units.**MMGT 193. Special Topics in Music Mgmt.. 4 Units.****MMGT 196. Music Industry Career Development. 2 Units.**

A career exploration and preparation class in which students assess current career trends, meet with leading practitioners, perform research in their specific field of interest and fine-tune their professional portfolio including resume, online presence, relevant work samples, cover letters, etc. Interpersonal skills and development is emphasized including how to interview and present one's self effectively to employers or internship host firms. Open to all students with an interest in music and entertainment careers. Prerequisite: Sophomore standing.

MMGT 197. Undergraduate Research. 1-4 Units.**MMGT 199. Music Management Exit Examination. 1 Unit.**

This class is a requirement for all students earning a Bachelor's Degree in Music Management or Music Industry Studies within the Conservatory. This summative oral examination is administered midway through the last semester of work prior to graduation. Students planning to graduate in the fall term must make arrangements with the Program Director to enroll in the prior spring semester. Graded on a Pass/No Credit basis only.

MMGT 206. Sound Recording Fundamentals. 3 Units.

This course introduces students to basic audio techniques applicable to recording sound. This course is a combination of lecture, lab sessions and independent studio projects which provides a basic understanding of how audio is captured, stored and manipulated in the recording industry.

MMGT 207. Performing Arts Administration. 3 Units.

This course is a practical approach to management and business issues that affect arts organizations. Topics include program planning, budget development, fund-raising, community relationships and concert promotion and production.

MMGT 208. Artist Management. 3 Units.

This course introduces students to the roles and responsibilities of a personal manager for a recording artist. Through reading, discussion, project-based work and taking on a working artist to advise and "manage" during the term, students have the opportunity to learn first-hand about the nature of the work of the artist manager and how to plan and execute a project for an artist. Prerequisite: MMGT 011 or permission of the instructor.

MMGT 209. Beyond Talent: Managing Performance Career. 2 Units.

This course provides students intending a career as a performer or artist with the knowledge and skills to help manage their career and image. This course combines readings, workshops, activities, and interviewing successful artists while students develop a basic promotional kit and career plan. Prerequisite: Permission of instructor.

MMGT 220. Media Production. 4 Units.

A laboratory class in which students learn to capture, edit and publish original video content which may include concerts, recitals, lectures, or community and regional music events. Students will become familiar with audio, video, and streaming tools, as well as the protocol and processes of working with various stakeholder to accomplish the course learning objectives. Prerequisites: Sophomore standing.

MMGT 221. Media Promotion. 4 Units.

This is a hands-on lab class in which students learn to promote designated projects for clients, using various means including paid, owned, and earned digital media. Students will learn about relevant forms of social media to accomplish the course learning objectives which primarily focus on audience-building data, measurement and evaluation of the effectiveness of various tactics and strategy used in media promotion. Class may be audited. Prerequisites: Sophomore standing.

MMGT 240. Musical Products Management. 3 Units.

This course introduces students to the inner workings of the operations, sales and financial aspects of the music products industry. Course work includes case studies, lab sessions at a music retailer, development of a retail store start-up plan and site visits to leading regional music products firms.

MMGT 260. Recording Studio Production. 2 Units.

This course provides students an opportunity to work independently and as part of a group learning about acoustical sound recording and digital production techniques. Classes develop sound recording and aural acuity relevant to the production of high quality music recordings. Course may be repeated for credit. Prerequisite: MMGT 106 with a grade of "B" or better or permission of instructor.

MMGT 270. Topical Seminars in Music Industry Studies. 1-3 Units.

Rotating series of seminars that study various segments of the music industry. Past seminars have included topics such as concert production/promotion, music licensing and supervision, and live sound engineering.

Music Performance Courses**MPER 120. Lyric Diction. 2 Units.**

Students examine theory and practice of singing Italian, German, English, and French. The course includes translation and declamation of texts.

MPER 121. Lyric Diction. 2 Units.

Students examine theory and practice of singing Italian, German, English, and French. The course includes translation and declamation of texts. Prerequisite: MPER 120.

MPER 130. Collaborative Piano. 1 or 2 Unit.

MPER 130 offers practical training in vocal and instrumental piano collaborative work. (Two units are given with permission of instructor).

MPER 131. Studio and Recital Accompanying. 1 Unit.

This practicum in accompanying is open to piano performance majors only for major ensemble credit for a maximum of two years.

MPER 140. Pedagogy of Piano. 2 Units.

Students study teaching methods and materials for elementary, intermediate and advanced piano students. Permission of instructor is required.

MPER 141. Pedagogy of Voice. 2 Units.

This course is an overview of the anatomy and physiology of the singing voice, emphasizing respiration, phonation, resonance and articulation. Students also examine various methods of teaching of singing based on current scientific discoveries as well as important classical treatises. Permission of instructor is required.

MPER 151. Principles of Conducting. 2 Units.

The course covers basic techniques of the baton, score reading and interpretation. Prerequisites: MCOM 032 and MCOM 033.

MPER 152. Choral Conducting. 2 Units.

Students study principles of conducting that are applied to choral rehearsals and repertoire. Prerequisite: MPER 151.

MPER 153. Instrumental Conducting. 2 Units.

Students study principles of conducting that are applied to band and orchestra rehearsal and repertoire. Prerequisite: MPER 151.

MPER 169. Advanced Opera Workshop. 1 Unit.

This course affords singers the opportunity to practice performance techniques learned in Opera Workshop through practical rehearsal application. The first term is dedicated to repertoire and audition technique (Craig), while second term focuses on scene study (Meisner, Felsenstein).

MPER 191. Independent Study. 1-2 Units.**MPER 193. Special Topics. 1-3 Units.****MPER 269. Advanced Opera Theatre Workshop. 1 Unit.****MPER 275. Ensemble Performance. 1-3 Units.**

Students will participate, by audition, in one or more of Pacific's ensemble experiences, to include: Pacific Singers, University Symphony Orchestra, Pacific Opera Theater, Jazz Ensemble, and Symphonic Wind Ensemble. Through regular experience in Pacific's ensembles, students develop growth in artistry, technical skills, collaborative competence and knowledge of repertory. A student's ensemble participation will be varied both in size and nature. Students will create, interpret, and appraise their own creative work and/or that of others through critique and analysis. Open to all students by audition.

MPER 280. Advanced Opera Production Major Ensemble. 1 Unit.

Major ensemble.

MPER 291. Graduate Independent Study. 1-4 Units.

MPER 293. Special Topics. 1-3 Units.

Music Therapy Courses

MTHR 135. Music with Children in Inclusive Settings: Therapeutic and Educational Applications. 3 Units.

This course presents specific music therapy techniques and skills for development of programs for children's successful integration within home/school/community environments. Students will identify and create therapeutic music strategies to effect changes in children's academic, social, motor, and leisure skills development. This course also acquaints students with relevant music therapy/education research and current legislation regarding children within inclusive settings. Open to non-majors. Prerequisites: SPED 123 and either MTHR 018 or MCOM 002; or with instructor permission.

MTHR 139. Research in Music. 2 Units.

The application of scientific methods to investigate music therapy and related disciplines (e.g., music education and music psychology) are reviewed, including: qualitative and quantitative methods and related designs, review and evaluation of research literature, and writing a research proposal. Statistical analyses and evidence-based practice are introduced. Prerequisite: MCOM 002 or Instructor Permission.

MTHR 140. Psychology of Music. 2 Units.

This course introduces the psychological foundations of music, including the study of acoustics, perception of sound, music and neuroscience, and physical and psychosocial responses to music. Prerequisite: MTHR 139 or MTHR 239 or permission of the instructor.

MTHR 141. Music Therapy in Mental Health and Social Services. 3 Units.

This course examines theory, research, and clinical skills related to music therapy for adults, children, and adolescents in various mental health and social service treatment settings. It also includes an introduction to current DSM criteria for mental disorders commonly encountered by music therapists, and an overview of major theories of psychotherapy as they relate to music therapy. The course introduces music therapy techniques for group treatment which includes music improvisation, songwriting, and basic relaxation methods. This course is for music therapy majors only and it must be taken concurrently with Fieldwork in Music Therapy. Prerequisites: MTHR 011, MTHR 018, MTHR 135, and MTHR 140, PSYC 017 and completion of Voice, Guitar, and Piano competencies.

MTHR 142. Music Therapy in Medicine and Health Care. 3 Units.

This course provides an overview of music therapy with children, adults, and older adults in medical settings. Students survey theories, methods, and empirically supported treatments in settings such as acute care, physical rehabilitation, gerontology, palliative care, preventative medicine, and health maintenance. It also includes the study of physical and psychosocial processes natural to aging and end of life, and assists students in developing skills in improvised music for relaxation and palliative care. The course is for music therapy majors only. Prerequisites: MTHR 141, BIOL 011 and completion of Voice, Guitar, and Piano competencies.

MTHR 143. Supervisory Techniques. 1 or 2 Unit.

This course offers techniques in the supervision of music therapy fieldwork. The course is only open to music therapy majors by permission of the instructor. Prerequisites: MTHR 020, MTHR 140 and MTHR 150.

MTHR 149. Clinical Musicianship Workshop. 1 Unit.

This course is designed to improve students' functional music, leadership, and therapeutic skills for use during fieldwork, internship, and professional practice. Learning experiences will focus on improving student musicianship (e.g., guitar, keyboard, voice, percussion, and improvisational skills), developing small ensemble leadership skills, and building musical repertoire within the context of leading music-based interventions for diverse clientele.

MTHR 150. Fieldwork in Music Therapy. 1-2 Units.

Fieldwork provides students with structured clinical experiences in music therapy under the supervision of a music therapist in varying community settings. This course repeated for credit and taken concurrently each semester students are enrolled in MTHR 135, MTHR 140, MTHR 141 and MTHR 142. Prerequisites: MTHR 011 and MTHR 018. This course is open only to music therapy majors, and a minimum of 4 units of Fieldwork (MTHR 150) is required for completion of the music therapy degree program.

MTHR 187. Internship in Music Therapy. 1 Unit.

This course consists of clinical training experience at an internship site approved by the AMTA. Successful completion of required hours and competencies allows students to sit for the Music Therapy Board Certification Examination. Prerequisites: Successful completion of all coursework and functional music skills, competency evaluation and individualized internship training plan. Students are required to enroll in MTHR 150 within the period of one year prior to the start of internship.

MTHR 191. Independent Study. 1-2 Units.

MTHR 197D. Undergraduate Research. 1-4 Units.

MTHR 230. Bonny Method of Guided Imagery and Music Level I Training. 3 Units.

Intensive 5-day residential seminar introduces theory and clinical applications of the Bonny Method of Guided Imagery and Music (BMGIM) and other music and imagery techniques. Participants gain intensive personal experience with BMGIM. Hands-on experiential exercises, demonstrations, and clinical examples introduce simple imagery techniques to add to participants' existing repertoire of therapeutic interventions. This residential phase of the course meets the Association of Music and Imagery (AMI) requirements for introductory training in the Bonny Method. The on-line learning component extends and deepens the student's understanding through exposure to literature in the Bonny Method, sharing of discoveries from readings and music listening, as well as personal reflection and integration of experiential learning. Due to the experiential nature of this course, participants must be willing to participate in all learning activities and in the group sharing process, and attend all seminar sessions as listed in the residential seminar course schedule. All students and instructors are expected to maintain confidentiality of personal material shared by group members. Prerequisites: Evidence of clinical experience and permission of instructor.

MTHR 231. Individual Music Therapy: Advanced Theory and Techniques. 3 Units.

This course explores contemporary theories and techniques for the advanced-practice music therapy student. The course includes an in-depth examination of alternative service delivery models (e.g., consultation, collaboration, coaching) and the application of psychological, educational, music-based, and holistic approaches to address the needs of diverse clientele. Advanced development of clinical music, research, and reflexive practice competencies are addressed. Prerequisites: Successful completion of MTHR 187 (or an approved music therapy internship) and permission of instructor.

MTHR 232. Group Music Therapy: Advanced Theory and Techniques. 3 Units.

This course examines theories and models for group music therapy with applications for a variety of clinical populations. The course includes approaches for quick group assessment and brief treatment environments. The focus is on therapist and member roles and tasks within group development processes. Students refine group facilitation skills that use music-centered techniques of improvisation and music-evoked imagery through in-class simulations and supervised clinical practice. Prerequisite: MTHR 231 with a "B" or better or permission of instructor.

MTHR 239. Research in Music. 2 Units.

The application of scientific methods to investigate music therapy and related disciplines (e.g., music education and music psychology) are reviewed, including: qualitative and quantitative methods and related designs, review and evaluation of research literature, and writing a research proposal. Statistical analyses and evidence-based practice are introduced. Prerequisite: MCOM 002 or Instructor Permission.

MTHR 240. Psychology of Music. 2 Units.

This course introduces the psychological foundations of music, including the study of acoustics, perception of sound, music and neuroscience, and physical and psychosocial responses to music. Prerequisite: MTHR 139 or MTHR 239 or permission of the instructor.

MTHR 245. Clinical Clerkship in Music Therapy. 1-4 Units.

As an alternate requirement for Thesis, Clinical Clerkship is designed for students who may want to focus on clinical skills and knowledge. Students complete a major project related to an applied therapeutic or educational setting.

MTHR 251. Music Therapy Supervision I: Introduction to Theory and Applications. 1 Unit.

This course provides a foundation for effective music therapy clinical supervision. It introduces multicultural, ethical, and legal considerations and explores factors unique to music therapy supervision. Readings, workbook assignments, field observations and in-class discussion of theories and techniques prepare students for MTHR 252, and practical experience supervising undergraduate students in clinical training settings. Prerequisite: MTHR 187 or an AMTA approved clinical internship.

MTHR 252. Music Therapy Supervision II: Applied Experience. 1 Unit.

This course provides mentored practice in clinical supervision and it supports individualized skill development of competencies for professional participation in clinical management and student, volunteer, or peer supervision situations. Learning experiences include direct on-site supervision of undergraduate music therapy students in fieldwork placements, maintaining the on-site learning environment, monitoring student progress, conducting formal evaluations, conducting group student supervision and regular participation in supervisors group consultation meetings with faculty. Prerequisite: MTHR 251 with a "B" or better.

MTHR 260. Advanced Clinical Practice in Music Therapy. 1 Unit.

This course provides individualized experiences for development of advanced clinical skills in music therapy. Students may focus on a new area of specialization, or may work within a familiar clinical environment that develops skills at a more advanced level. Experiences may include supervised practice in advanced music therapy techniques, interdisciplinary collaboration, new program development, or expansion of an existing clinical program. Prerequisites: two semesters of MTHR 187 or clinical internship.

MTHR 265. Human Research in Music Therapy: Supervised Experience. 1 Unit.

This course offers individualized experiences for development of advanced research skills in music therapy. It provides faculty oversight and supervision of human research in clinical or laboratory settings. Students may focus on their own independent research project or may work within a collaborative or faculty-directed research environment. It is required for students who conduct summer research activities with human subjects and includes projects that contribute to completion of the master's thesis or clinical clerkship. This course may be repeated. Prerequisites: Completion of University Human Subjects (IRB) training for student investigators, and permission of instructor.

MTHR 275. College Teaching in Music Therapy: Curriculum, Competencies and Classroom. 3 Units.

Students review the AMTA requirements for music therapy undergraduate program curriculum and for competency-based education and clinical training. The course provides mentored practice in teaching foundational level music therapy college courses, and it supports individualized skill development for professional participation in academic music therapy programs as an instructor. Permission of instructor.

MTHR 291. Graduate Independent Study. 1-4 Units.

MTHR 297. Graduate Independent Research. 1-4 Units.

MTHR 299. Thesis. 1-4 Units.

Students create an original monograph that embodies original research.

Brubeck Institute Courses

MUBI 150. Brubeck Fellows Seminar. 3 Units.

This course is for Brubeck Fellows. It involves the study, memorization, and analysis for jazz standards. Through recorded versions of compositions, students will learn select standards primarily by ear and will transfer that information into lead sheet form. Class involves performance on instruments with drummers utilizing piano/vibes and occasionally drums to demonstrate material comprehension.

Jazz Studies Courses

MUJZ 110. Jazz Arranging and Composition. 3 Units.

This course focuses on familiarizing students with jazz composition and arranging techniques for the small jazz ensemble. Two and three part writing techniques associated with the jazz tradition are the focus. Prerequisites: MUJZ 011 and MUJZ 031 or permission of the instructor.

MUJZ 111. Jazz Composition for the Large Ensemble. 3 Units.

This course focuses on the development of writing skills aimed primarily for the large ensemble. This course will include a focus on big band writing plus the incorporation of strings or other non-traditional jazz instrumentation. Prerequisite: MUJZ 110 or permission from the instructor.

MUJZ 130. Advanced Improvisation. 2 Units.

Students study advanced techniques and practices of jazz improvisation. Topics include tune analysis and develops a more definitive concepts of chord/scale relationships. Students examine contemporary performance practices that include the use of synthetic scales and free improvisation. Prerequisites: MCOM 032, MCOM 033, MUJZ 030, MUJZ 031 or permission of instructor.

MUJZ 131. Advanced Improvisation II. 2 Units.

This course is a continuation of Advanced Improvisation. Students will explore advanced techniques of jazz performance and improvisation. Students will also explore the process of integrating new materials and improvisation methods into their playing. Prerequisite: MUJZ 130 or permission from the instructor.

MUJZ 140. Jazz Pedagogy. 2 Units.

Students study jazz education materials and performance techniques designed for the student who may teach jazz ensembles or design curriculum. Prerequisites: MCOM 032 and MCOM 033; MUJZ 030 and MUJZ 031 or permission of instructor.

MUJZ 150. Honors Jazz Seminar. 3 Units.

A stylistic study of jazz styles and performers involving transcription, ensemble performance and composition study of selected works and artists. Prerequisite: Acceptance in the Honors Jazz Degree.

MUJZ 158. Advanced History of Jazz. 3 Units.

This course is a comprehensive study of jazz styles and performers through intelligent listening and historical research. Realizing jazz as an art form created by African-Americans, this course investigates issues concerning race, ethnicity, and social justice. The course content involves connections to slavery, Civil and World Wars, segregation, and the musical response of African-Americans. It also includes an analysis of jazz compositions, live performance critiques, album reviews, artist papers, and a research project that involves the Brubeck Collection. This course is designated for music students with junior or senior standing. Prerequisite: MCOM 033.

MUJZ 161. Jazz Seminar and Perspectives I. 3 Units.

Jazz Seminar and Perspectives I is comprised of two major components that involve Undergraduate Research and Performance Perspectives. Research topic involves the various cultural, economic, historical, and social aspects of jazz. Performance Perspectives Component involves jazz performance issues, stylistic comparisons of artists, works of major composers, and jazz historical perspectives. Topics are variable. Students are involved with in-class performances, research papers, and music transcriptions. An assembly of a portfolio serves as a key component of this course. Prerequisites: MUJZ 008, MUJZ 010, MUJZ 011, MUJZ 020, MUJZ 021, MUJZ 030, MUJZ 031 or permission of instructor.

MUJZ 162. Jazz Seminar and Perspectives II. 3 Units.

Jazz Seminar and Perspectives II is comprised of two major components that involve Undergraduate Research and Performance Perspectives. Research topic involves the various cultural, economic, historical, and social aspects of jazz. Performance Perspectives Component involves jazz performance issues, stylistic comparisons of artists, works of major composers, and jazz historical perspectives. Topics are variable. Students are involved with in-class performances, research papers, and music transcriptions. An assembly of a portfolio serves as a key component of this course. Prerequisites: MUJZ 008, 010, 011, 020, 021, 030, 031, 161 or permission of the instructor.

MUJZ 163. Jazz Seminar and Perspectives III. 3 Units.

Jazz Seminar and Perspectives III is comprised of two major components that involve Undergraduate Research and Performance Perspectives. Research topic involves the various cultural, economic, historical, and social aspects of jazz. Performance Perspectives Component involves jazz performance issues, stylistic comparisons of artists, works of major composers, and jazz historical perspectives. Topics are variable. Students are involved with in-class performances, research papers, and music transcriptions. An assembly of a portfolio serves as a key component of this course. Prerequisites: MUJZ 008, MUJZ 010, MUJZ 011, MUJZ 020, MUJZ 021, MUJZ 030, MUJZ 031, MUJZ 161, MUJZ 162 or permission of instructor.

MUJZ 164. Jazz Seminar and Perspectives IV. 3 Units.

Jazz Seminar and Perspectives IV is comprised of two major components involving Undergraduate Research and Performance Perspectives. Research topic involves the various cultural, economic, historical, and social aspects of jazz. Performance Perspectives Component involves jazz performance issues, stylistic comparisons of artists, works of major composers, and jazz historical perspectives. Topics are variable. Students are involved with in-class performances, research papers, and music transcriptions. An assembly of a portfolio serves as a key component of this course. Prerequisites: MUJZ 008, MUJZ 010, MUJZ 011, MUJZ 020, MUJZ 021, MUJZ 030, MUJZ 031, MUJZ 161, MUJZ 162, MUJZ 163 or permission of instructor.

MUJZ 171. Jazz Applied I. 1-2 Units.

This course is for upper division Jazz Studies majors who have passed the sophomore applied major examination in their principle instrument or voice. It is required for Jazz Studies majors. Enrollment in applied music requires an applied music fee per unit.

MUJZ 172. Jazz Applied II. 1-2 Units.

This course is for upper division Jazz Studies majors who have passed the sophomore applied major examination in their principal instrument or voice. It is required for Jazz Studies majors. Enrollment in applied music requires an applied music fee per unit.

MUJZ 173. Jazz Applied III. 1-2 Units.

This course is for upper division Jazz Studies majors who have passed the sophomore applied major examination in their principal instrument or voice. It is required for Jazz Studies majors. Enrollment in applied music requires an applied music fee per unit.

MUJZ 174. Jazz Applied IV. 1-2 Units.

This course is for upper division Jazz Studies majors who have passed the sophomore applied major examination in their principal instrument or voice. It is required for Jazz Studies majors. Enrollment in applied music requires an applied music fee per unit.

MUJZ 180. Applied Jazz Composition. 2 Units.

Each student registered for Applied Jazz Composition will receive a 1-hour private lesson once a week. The subject matter will involve problems and solutions in the composition of original jazz works and traditional models from noted jazz composers. Students will learn various compositional techniques, and explore notation, instrumentation, orchestration, and performance issues. Prerequisite: MUJZ 031 or permission from the instructor.

MUJZ 191. Independent Study. 1-4 Units.**MUJZ 291. Graduate Independent Study. 1-4 Units.****General Music Courses****MUSC 193. Special Topics. 4 Units.****MUSC 197. Independent Research. 1-4 Units.****MUSC 202. Introduction in Music Research. 3 Units.**

This course is designed for the graduate level student to develop music research skills.

MUSC 203. Contemporary Issues in Music Education and Music Therapy. 3 Units.

Graduate students research, analyze, and reflect on current values, philosophical issues, and contemporary trends in the professions of music education and music therapy.

Music Education

Master of Music Degree in Music Education

The music education graduate program offers a core course of study along with numerous electives in music and education that provide an individualized program that caters to the individual's specific career goals. Candidates for the Master of Music degree must have their baccalaureate degree from an accredited school or department of music and must also give evidence of accomplishments during their undergraduate years commensurate with those that lead to the Bachelor of Music degree at University of the Pacific. All transcripts and placement tests are evaluated; recommendations for courses of study are made accordingly. Supplementary undergraduate work may be prescribed if deemed advisable. The major field is music education.

The music education department offers two plans for students who have completed an undergraduate music education degree: Plan A with emphasis on research, Plan B with emphasis on advanced techniques and practices in music education and music. Students with an undergraduate music degree other than music education can obtain the master's degree and California music certificate in teaching through the Master of Education in Music Education offered through the School of Education. See music education department chair for program description.

In certain cases (depending on previous teaching experience), a candidate may gain the teaching credential with the Master of Music Education degree, working with both the Conservatory of Music and the Benerd College (formerly Gladys L. Benerd School of Education); see music education department coordinator for details. Note that both MM programs contain a number of electives; specific courses come from the upper division and graduate courses listed later in this catalog and in the university's general catalog. This flexibility of electives allows for the personalization of the degree plan.

Musician and Educational Leadership

1. Apply advanced musical skills in a variety of performance and educational settings, such as lessons, rehearsals and concerts, as an instrumentalist, vocalist, and/or conductor
2. Incorporate advanced music theory and music history knowledge into educational settings
3. Demonstrate musical leadership and professionalism
4. Demonstrate advanced performance and/or pedagogical techniques across a range of instrument/vocal settings.

Music Education Theory/Philosophy

1. Apply comprehensive, in-depth knowledge of the foundations and principles of music education practice
2. Articulate and defend a personal philosophy, approach and/or theory to music education
3. Identify areas of common practice and philosophy between music education, music therapy, and other educational areas of study.

Research

1. Articulate the value and the techniques of various research methodologies in music
2. Perform a literature review on a musical topic of interest
3. Demonstrate understanding of ethical principles for research, such as principles for protection of human participants and assessment of risk and benefit

4. Conduct and present research in music education, to classmates and/or professional organizations.

Master of Music in Music Education

Students must complete a minimum of 33 units with a Pacific cumulative grade point average of 3.0 in order to earn the master of music degree in music education.

Plan A: Thesis

MUSC 202	Introduction in Music Research	3
MUSC 203	Contemporary Issues in Music Education and Music Therapy	3
Select a minimum ten units from the following:		10
MHIS Minimum 2 units in Music History		
MCOM Minimum 2 units in Music Theory		
MAPP Additional units in Applied Music		
Select three to nine units of non music courses (such as education, psychology, languages, statistics)		3-9
Select four to ten units from:		4-10
MEDU Music Education		
MHIS Music History		
MTHR Music Therapy		
MCOM Music Theory		
MAPP Music Applied		
MEDU 299	Thesis	3
One of the following must be met before degree is awarded:		
Bachelor's Degree in Music Education		
Music Education Credential		

Note: 1) 18 units must be at the graduate (200 or higher) level.

Plan B: Seminar

MUSC 202	Introduction in Music Research	3
MUSC 203	Contemporary Issues in Music Education and Music Therapy	3
Select a minimum ten units from the following:		10
MHIS Minimum 2 units in Music History		
MCOM Minimum 2 units in Music Theory		
MAPP Additional units in Applied Music		
Select three to nine units of non music courses (such as education, psychology, languages, statistics)		3-9
Select four to ten elective units from:		4-10
MEDU Music Education		
MHIS Music History		
MTHR Music Therapy		
MCOM Music Theory		
MAPP Music Applied		
One of the following must be met before degree is awarded:		
Bachelor's Degree in Music Education		
Music Education Credential		

Note: 1) 18 units must be at the graduate (200 or higher) level

Music Therapy

The Master of Arts in Music Therapy program at University of the Pacific prepares students for a career using music-based interventions

in a focused and concentrated manner to address health-related, psychological, educational, and other rehabilitative needs. The program offers students greater depth and breadth in knowledge and skills for advanced clinical competency. Through advanced learning and skill development, students will have a vital competitive advantage in the current healthcare market to provide quality patient care.

Two paths to obtaining an MA in Music Therapy

- **Two-Year Master of Arts in Music Therapy:** This 32-unit program is designed for students who hold an undergraduate degree in music therapy (or its equivalent) and are looking for advanced-level clinical skills or research practice to secure a competitive position in today's rapidly growing health care system.
- **Three-Year Plus Internship Master of Arts in Music Therapy:** This 55-unit* program is designed for those with a bachelor's degree in music or related fields (e.g. psychology, special education, etc.) who seek both entry-and advanced-level training in music therapy. Instruction in this program is delivered in the following ways: online (asynchronously); online/remote (synchronously); hybrid (in-seat and online/remote synchronously); and in-seat. The program begins with strong fundamental musicianship and adds specific knowledge and skills to meet the requirements of the Certification Board for Music Therapists (CBMT) and the American Music Therapy Association (AMTA).

* Additional units may be required depending on prior degree, coursework and experience

Plan of Study

Students focus on their specific personal career goals by selecting a thesis or non-thesis track supporting: a) development of advanced clinical, administrative, and program development skills, or b) preparation for eventual entry into teaching and research careers.

Both tracks in the Master of Arts in music therapy program allow for flexibility in the design of individualized study plans. Master of Arts students should consult with their adviser during the first term in residency to determine their overall plan of study and to detail their schedule of classes for each semester.

Program Policies

1. Students must (a) maintain a minimum term and cumulative grade point average of 3.0, (b) earn a B- or better in all music therapy courses, and (c) demonstrate interpersonal and professional skills appropriate to the clinical profession as evaluated by the Music Therapy Program faculty, in order to remain in the program.
2. Students must pass the Board Certification Examination or provide evidence of current re-certification (MT-BC) status prior to completion of the Master of Arts degree in music therapy.
3. Students must demonstrate advanced clinical competencies as defined by the American Music Therapy Association (AMTA). Particular emphasis is placed upon the acquisition of advanced competencies relevant to the student's area of specialization.

Clinical Musicianship

- Design a broad range of improvisational experiences and utilize a variety of clinical improvisation techniques for therapeutic purposes.
- Apply advanced musical skills in the clinical use of at least two of the following: keyboard, voice, guitar and/or percussion.
- Design and employ a broad range of re-creative music experiences for therapeutic purposes

Music Therapy Theory

- Apply comprehensive, in-depth knowledge of the foundations and principles of music therapy practice.
- Articulate and defend a personal philosophy, approach and/or theory to music therapy.

Clinical Supervision

- Design and implement methods of observing and evaluating supervisees that have positive effects on music therapy students and professionals at various levels of advancement and at different stages in the supervisory process.
- Evaluate the effects of one's own personality, supervisory style, and limitations on the supervisee and the supervisory process and seek consultation as indicated.

Advanced Clinical Skills

- Apply comprehensive knowledge of current methods of music therapy assessment, treatment, and evaluation.
- Utilize advanced music therapy methods within one or more theoretical frameworks to assess and evaluate clients' strengths, needs and progress.

Research

- Perform and evaluate the results of a comprehensive literature review to identify gaps in knowledge.
- Conduct research according to ethical principles for protection of human participants, including informed consent, assessment of risk and benefit, and participant selection.

Master of Arts in Music Therapy

Students must complete a minimum of 32 units with a Pacific cumulative and major/program grade point average of 3.0 or higher in order to earn the Master of Arts degree in music therapy.

Music Therapy Foundational Courses:

MTHR 231	Individual Music Therapy: Advanced Theory and Techniques	3
MTHR 232	Group Music Therapy: Advanced Theory and Techniques	3
MTHR 251	Music Therapy Supervision I: Introduction to Theory and Applications	1
MTHR 252	Music Therapy Supervision II: Applied Experience	1
MTHR 260	Advanced Clinical Practice in Music Therapy *	2
MUSC 203	Contemporary Issues in Music Education and Music Therapy	3

- * 1. Two semesters, one unit each semester.
- 2. Students may fulfill one unit of this requirement by completing a Special Topics course in a clinical practice area.

Choose one of the following Options:

Option A, Thesis Plan

EDUC 201	Techniques of Research	3
or MTHR 239 & MTHR 265	Research in Music and Human Research in Music Therapy: Supervised Experience	
MUSC 202	Introduction in Music Research	3
MTHR 299	Thesis	4
Select three of the following Specialized Electives:		9
EDUC 216	Nature and Conditions of Learning	

EDUC 330	Advanced Human Development I	
EDUC 331	Advanced Human Development II	
EDUC 335	Psychotherapeutic Interventions	
EDUC 337	Crisis Intervention	
EDUC 338	Consultation Methods	
EDUC 341	History and Systems in Psychology	
EDUC 343	Psychopathology and Wellness Promotion	
EDUC 348	Neuropsychology	
MTHR 240 & MTHR 291	Psychology of Music and Graduate Independent Study	

Option B, Non- Thesis Plan

EDUC 201	Techniques of Research	3
or MTHR 239 & MTHR 265	Research in Music and Human Research in Music Therapy: Supervised Experience	
MTHR 245	Clinical Clerkship in Music Therapy	1
MUSC 202	Introduction in Music Research	3
Select four of the following Specialized Electives:		12
EDUC 216	Nature and Conditions of Learning	
EDUC 330	Advanced Human Development I	
EDUC 331	Advanced Human Development II	
EDUC 335	Psychotherapeutic Interventions	
EDUC 337	Crisis Intervention	
EDUC 338	Consultation Methods	
EDUC 341	History and Systems in Psychology	
EDUC 343	Psychopathology and Wellness Promotion	
EDUC 348	Neuropsychology	
MTHR 240 & MTHR 291	Psychology of Music and Graduate Independent Study	

Master of Arts in Music Therapy - 3 Year Internship Option

Students must complete a minimum of 32 units with a Pacific cumulative and major/program grade point average of 3.0 or higher in order to earn the Master of Arts degree in music therapy.

Pre-Board-Certification Courses:

MTHR 011	Music as Therapy: A Survey of Clinical Applications	3
MTHR 018	Basic Skills for Music Therapists and Allied Professionals	3
MTHR 020	Observation and Assessment in Music Therapy	2
MTHR 135	Music with Children in Inclusive Settings: Therapeutic and Educational Applications	3
MTHR 141	Music Therapy in Mental Health and Social Services	3
MTHR 142	Music Therapy in Medicine and Health Care	3
MTHR 150	Fieldwork in Music Therapy *	1-2
MTHR 187	Internship in Music Therapy **	1

* Must take a total of 4 units.

** Must take a total of 2 units.

Music Therapy Foundational Courses:

MTHR 231	Individual Music Therapy: Advanced Theory and Techniques	3
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MTHR 232	Group Music Therapy: Advanced Theory and Techniques	3
MTHR 251	Music Therapy Supervision I: Introduction to Theory and Applications	1
MTHR 252	Music Therapy Supervision II: Applied Experience	1
MTHR 260	Advanced Clinical Practice in Music Therapy *	2
MUSC 203	Contemporary Issues in Music Education and Music Therapy	3

* Two semesters, one unit each semester.

Choose one of the following Options:

Option A, Thesis Plan

EDUC 201	Techniques of Research	3
or MTHR 239 & MTHR 265	Research in Music and Human Research in Music Therapy: Supervised Experience	
MTHR 299	Thesis	4
MUSC 202	Introduction in Music Research	3
Select three of the following Specialized Electives:		9
EDUC 216	Nature and Conditions of Learning	
EDUC 330	Advanced Human Development I	
EDUC 331	Advanced Human Development II	
EDUC 335	Psychotherapeutic Interventions	
EDUC 337	Crisis Intervention	
EDUC 338	Consultation Methods	
EDUC 341	History and Systems in Psychology	
EDUC 343	Psychopathology and Wellness Promotion	
EDUC 348	Neuropsychology	
MTHR 240 & MTHR 291	Psychology of Music and Graduate Independent Study	

Option B, Non-Thesis Plan

EDUC 201	Techniques of Research	3
or MTHR 239 & MTHR 265	Research in Music and Human Research in Music Therapy: Supervised Experience	
MTHR 245	Clinical Clerkship in Music Therapy	1
MUSC 202	Introduction in Music Research	3
Select four of the following Specialized Electives:		12
EDUC 216	Nature and Conditions of Learning	
EDUC 330	Advanced Human Development I	
EDUC 331	Advanced Human Development II	
EDUC 335	Psychotherapeutic Interventions	
EDUC 337	Crisis Intervention	
EDUC 338	Consultation Methods	
EDUC 341	History and Systems in Psychology	
EDUC 343	Psychopathology and Wellness Promotion	
MTHR 240 & MTHR 291	Psychology of Music and Graduate Independent Study	

Eberhardt School of Business

<https://www.pacific.edu/academics/schools-and-colleges/eberhardt-school-of-business.html>

Phone: (209) 946-2476

Location: Weber Hall

Programs Offered

Master of Accounting (MAcc)

Master of Finance (MSF)

Master of Science in Business Analytics (MSBA)

Bachelor of Science in Accounting/Master of Accounting Dual Degree Program

Mission

The Eberhardt School of Business develops knowledgeable, innovative business leaders in a personalized, experience-based learning environment and produces scholarship that contributes to disciplinary knowledge, informs teaching, and advances the practice of business.

We share a set of underlying principles that govern our behaviors and our ability to achieve our mission. These include:

- Maintaining a student-centered learning environment;
- Educating the whole person;
- Stimulating intellectual growth;
- Maintaining a mutually supportive community of faculty, staff and students;
- Engaging external stakeholders;
- Promoting excellence;
- Being socially responsible;
- Behaving ethically and with integrity;
- Providing service to the university, community and profession.

Degree programs offered by the Eberhardt School of Business are designed to fulfill this mission and to provide the educational breadth and depth tomorrow's leaders will need.

Business Administration Courses

BUSI 100. Management Information Systems. 4 Units.

This course is an introduction to the concepts and skills needed to utilize information systems resources. The course focuses on the role of information systems in management function with an emphasis on end-user computing, that includes the role of users in information system planning and design. Topics include information systems technology, applications and development. Students gain experience with spreadsheet, data base and network applications. Prerequisite: COMP 025 or COMP 051.

BUSI 104. Operations Management. 4 Units.

Students analyze the production and operations systems in the organization and application of quantitative methods in solution of production and operations problems. A major emphasis is on managerial and economic implications. Prerequisites: MATH 037 and MATH 045, both with a "C" or better, BUSI 031, BUSI 033, ECON 053, and ECON 055, and an acceptable computer course. Junior standing.

BUSI 105. Financial Management. 4 Units.

This course introduces financial instruments and institutions from the perspective of the financial management of the firm. Tools of financial analysis and planning as well as principles of short-term and long-term financing are developed as they relate to profit-ability and liquidity. Prerequisites: MATH 037 and MATH 045 both with a "C" or better, BUSI 031, ECON 053, and ECON 055. Junior standing.

BUSI 106. Sport Analytics. 4 Units.

Analytics is the discovery, interpretation, and communication of meaningful patterns in data. Sports Analytics refers to the use of data and quantitative methods to measure performance and make decisions to gain advantage in the competitive sports arena. Teams in basketball, football, ice hockey and soccer have followed baseball's lead and developed analytics departments to support a myriad of decision-making on and off the field. This course explores recent trends in sport analytics from a practical point of view. Students will learn the skills and ideas to create analytics of potential value to sport organizations. The course content will cover topics such as data management, statistic data analysis, modeling, and decision making in various sport settings. Prerequisites: BUSI 108 and junior standing.

BUSI 107. Marketing Management. 4 Units.

BUSI 107 is an introduction to the institutions, techniques, policies and procedures utilized in the planning and performance of the activities which direct the flow of goods and services from producers to consumers. An emphasis is placed on the managerial process of decision-making in the setting of marketing strategy. Prerequisite: ECON 053. Sophomore standing.

BUSI 108. Introduction to Business Analytics. 4 Units.

This course is designed as an introduction to the field of business data analytics. Analytics involves the extensive use of computer applications, data (both "big" and "small"), and quantitative methods to help drive business decisions. Students will learn essential theories, concepts, methodologies, and use leading computer tools to perform analysis on real world data. Prerequisites: MATH 045 and MATH 037 both with a grade of "C" or better, BUSI 100, Junior standing.

BUSI 109. Management and Organizational Behavior. 4 Units.

This course provides students with 1) a broad understanding of the factors that affect human behavior in organizations and 2) a set of tools managers can use to influence the attitudes and behaviors of employees at the individual, group, and organizational levels. Junior standing required.

BUSI 110. Career and Development Seminar. 1 Unit.

This course is designed to enable business students to clearly define their career objectives and available opportunities. Through the course business students understand the connection between internships and full-time careers, are trained in the methods of conducting a successful job search and prepare for on-going career development. Topics include career assessment, resumes and related correspondence, interviewing, career planning, and job search resources. The course also discusses opportunities available in graduate studies. Junior standing.

BUSI 111. Accounting Information Systems. 4 Units.

The course emphasizes the use of accounting software and the interaction of accountants with information systems. It also covers assessment of internal and computer controls in order to identify key risks within accounting cycles, and it reviews the latest computer architectures used in ERP. Prerequisites: BUSI 033 and BUSI 100. Junior standing.

BUSI 113A. Intermediate Accounting I. 4 Units.

Students study the income measurement and asset valuation under generally accepted accounting principles. The course emphasizes current procedures, form and content of financial statements and critical evaluation of alternative accounting practices. Prerequisite: BUSI 031 with a "C" or better. Junior standing.

BUSI 113B. Intermediate Accounting II. 4 Units.

Students continue to study generally accepted accounting principles. Topics include owners' equity, dilutive securities, pensions, leases, income taxes, statement of cash flows and inflation accounting. Prerequisite: BUSI 113A with a "C" or better. Junior standing.

BUSI 113C. Advanced Accounting. 4 Units.

Students study advanced accounting theory and practice that includes accounting for inter-corporate investments, partnerships, foreign currency transactions, government and nonprofit organizations and current topics. Prerequisite: BUSI 113B with a "C" or better. Junior standing.

BUSI 115. Tax Accounting. 4 Units.

This course emphasizes federal tax laws, regulations and legal doctrines that significantly affect businesses, property transactions, and individuals. Tax planning techniques and tax research skills are emphasized. Prerequisites: BUSI 031 and BUSI 033 both with a "C" or better. Junior standing.

BUSI 117. Cost Accounting. 4 Units.

This course emphasizes skills used by management accountants or other decision makers within an organization for planning and control. Topics include analysis of cost structures, profit planning, product cost systems, cost estimation, budgeting, and the behavioral implications of management accounting systems. Prerequisites: BUSI 031, BUSI 033, and MATH 037 with a "C" or better. Junior standing.

BUSI 119. Auditing. 4 Units.

This capstone course in accounting studies the integration of financial and management accounting systems. Topics include the attest function and ethics, generally accepted auditing standards, systems of internal control, evidence and audit reports. Prerequisite: BUSI 113A with a "C" or better. Junior standing.

BUSI 121. Financial Markets. 4 Units.

Students examine the monetary transmission mechanism with emphasis on its implications for financial management of the individual firm. Topics include the institutions of money and credit creation, the flow-of-funds accounts and financial market subsection interconnection. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 122. Student Investment Fund (SIF). 4 Units.

Operated entirely by students, this course allows students to gain hands-on, real world experience in managing an investment fund with substantial market value. Students perform sector analyses as well as financial analyses of a wide array of securities. As a group they determine the fund's sector allocation and stock/bond/cash allocation. SIF, while maintaining a well-diversified profile, strives to outperform the market (S&P 500). Prerequisites: BUSI 105 with a "C" or better and permission of instructor. Junior standing. May be taken twice for credit.

BUSI 123. Investment Analysis. 4 Units.

Students examine the nature of securities markets and the characteristics of various types of securities for institutional and personal investment. Sources of investment information, security valuation and investment planning are introduced. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 124. Entrepreneurial Finance. 4 Units.

Entrepreneurial Finance discusses the financial issues facing a business start-up and those of a growing enterprise. Specific attention is paid to the acquisition of financing for new ventures, financial management of new and growing businesses, and the harvest of the entrepreneurial venture. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 125. Intermediate Financial Management. 4 Units.

This is a second course in business finance with emphasis on problem solving. Selected problems in the management of long-term and short-term assets are examined in depth and techniques for optimizing the goals of the firm are developed. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 126. Topics in Finance. 4 Units.

This course is an in-depth examination of special topics of current interest in the field of finance. Students and faculty together explore empirical and theoretical issues in such areas of finance as investment analysis, financial management, financial markets and other related areas. Prerequisites: BUSI 105 with a "C" or better and BUSI 121. Junior standing.

BUSI 127. Sport Economics and Finance. 4 Units.

This course focuses on providing students with the tools to understand how financial decisions are made within the sport industry. It examines basic financial concepts and issues related to the sport industry, and provides an overview of ownership, taxation, financial analyses, analytics, salary structures, and economic impact studies within the sport industry.

BUSI 134. Conflict Management. 4 Units.

Conflict is inevitable in organizational, inter-organizational and international settings. This course deals with conflict in concept and in practice and is designed to provide insights into its causes and its productive and destructive consequences. It also focuses on providing tools for managing conflict productively, and particularly emphasizes negotiation. Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 137. Database Management Systems. 4 Units.

Students learn to develop database management systems to design and build business applications. The course teaches database design (normalization), queries (SQL), development of business applications that use forms and reports, and an introduction to database administration. Prerequisite: BUSI 100 with a "C" or better. Junior standing.

BUSI 138. Networking and Telecommunications Management. 4 Units.

Students examine design, implementation, and management of local area networks. Studies include design issues in wide area networks and telecommunications with emphasis on Internet connectivity in addition to network server setup and administration that includes Web site administration. Prerequisite: BUSI 100 with a "C" or better. Junior standing.

BUSI 139. Electronic Commerce Project. 4 Units.

Students design and build applications for electronic commerce. Students use databases and programming to build interactive Web sites and Apps. Prerequisite: BUSI 137 with a "C" or better. Junior standing.

BUSI 140. Business Systems Analysis. 4 Units.

Students study systems development life cycle, methods and tools for systems analysis and design, human factors, user interface, and systems integration issues. Prerequisite: BUSI 136. Junior standing.

BUSI 141. Marketing Research. 4 Units.

Students study the concepts and techniques useful in the solution of marketing problems and in the identification of marketing opportunities. This course emphasizes the design of information acquisition and the evaluation and interpretation of research findings. Prerequisites: BUSI 107 and MATH 037 with a "C" or better. Junior standing.

BUSI 142. Personal Selling and Sales Management. 4 Units.

Personal Selling and Sales Management examines the sales function from strategic competitive importance to the firm to required direct sales skills of individual salesperson. Major subject areas covered are: the sales process, recruitment and training, organization and focus, "territories", evaluation and compensation. Prerequisite: BUSI 107 with a "C" or better.

BUSI 143. Product Innovation. 4 Units.

Maintaining competitiveness in the contemporary marketplace requires that companies focus increasingly on the management of product and service innovation. This course addresses the innovation process-technology-based and otherwise-from the identification of new ideas through the development of innovations and eventual introduction of novel products to consumers. Topics include sources of innovation, identification and screening of product innovations, business planning for new products, technological forecasting, integrating innovation with business objectives and organizational models for fostering innovation. Prerequisites: BUSI 107 and BUSI 141 with a "C" or better. Junior standing.

BUSI 144. Sport Marketing and Promotions. 4 Units.

This course focuses on four aspects of sports marketing: 1) marketing of sport products, 2) using sport as a marketing tool, 3) sport organizations' use of public relations, and 4) the role of technology in sport marketing and public relations. Prerequisites: BUSI 107 with a "C" or better and sophomore standing.

BUSI 146. Advanced Business Analytics. 4 Units.

This course covers advanced techniques for predictive analytics related to business problems. Emphasis will be given to approaches appropriate for large data sets. Enterprise level software will be used to analyze large real-world data. Students will also learn to write computer programs to obtain data not readily available in package software. The prerequisite for this course is BUSI 108 with a "C" or better.

BUSI 147. Consumer Behavior. 4 Units.

Students study the bases for consumer behavior, which include relevant information from social psychology, sociology, and cultural anthropology. Topics include the application of analysis of consumers' behavior and attitudes to marketing management decisions. Management decision areas that are discussed include advertising, product development, marketing research and pricing. Prerequisite: BUSI 107 with a "C" or better. Junior standing.

BUSI 148. Promotions Management. 4 Units.

Students study the theory and practices used in the promotions component of the marketing mix. Students are exposed to a number of techniques employed by marketing departments, advertising firms and public relations professionals to advertise and promote products and or services. Prerequisite: BUSI 107 with a "C" or better. Junior standing.

BUSI 149. Marketing Analytics. 4 Units.

Using case studies, data simulations, data analysis techniques and examples from both for-profit and non-profit organizations, students will learn how marketing analytics can be used to optimize all areas of marketing, including consumer behavior prediction, target market reach and expansion, advertising targeting and optimization, social media and new platforms, and consumers' mobile experience and outreach. Prerequisites: BUSI 107 and BUSI 108 both with a grade of "C" or better, Junior standing.

BUSI 150. Business Analytics Project. 4 Units.

The Business Analytics Project is the capstone course that allows students to apply various data processing and analysis techniques in marketing, management, finance, accounting, operations, and other business disciplines. Students will use real-world data to produce analytics reports that facilitate data-driven business decision making. The prerequisite for this course is COMP 61 & BUSI 146 with a "C" or better.

BUSI 151. Digital Marketing. 4 Units.

In this course, students will learn how digital marketing has revolutionized the interactions between firms and consumers. The course is designed to get students to think like a digital marketing professional, and to give them experience with industry#relevant hands# on assignments and exercises. Prerequisites: BUSI 107 Marketing Management with a grade of C or better; junior standing.

BUSI 153. Entertainment Law. 4 Units.

This course explores legal relationships between entertainment entities and individuals involved in music management, film production, publishing, distribution, and the internet business. The course will expand the students' understanding through leading judicial decisions that have had an impact on the entertainment industry. The subject matter includes; copyright, trademark, contracts, torts, first amendment, anti-trust, state statutory law, agency and international law. Prerequisite: BUSI 053 with a "C" or better. Junior standing.

BUSI 157. Commercial Law. 4 Units.

This course is an in-depth study of commercial transactions between entities and individuals in the business environment. The topics that are covered include contracts, commercial paper, sales, secured transactions, bankruptcy, personal property, securities regulation and other related topics over the semester. Case materials and problems are used extensively in the course. Prerequisite: BUSI 053 with a "C" or better. Junior standing. (PLAW)

BUSI 159. Employment Law. 4 Units.

This course examines major labor-management relations legislation and its interpretation and treatment by administrative agencies and the courts. Primary emphasis is on the National Labor Relations Act as amended, but attention is also given to law concerning public sector labor relations, employment discrimination and other related law. Prerequisite: BUSI 053 with a "C" or better. Junior standing. (PLAW)

BUSI 163. International Financial Management. 4 Units.

This course is an analysis of management problems that arise in an international financial environment. Specific consideration is given to financial risk (s), management and international financial markets. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 165. International Marketing. 4 Units.

Students examine the environment for marketing across borders. The course covers marketing practice, policies and strategies in the multinational setting. Students complete a global screening of countries and draw up a marketing plan and strategy for a given product. Prerequisite: BUSI 107 with a "C" or better. Junior standing. (ETHC)

BUSI 169. International Management. 4 Units.

Develops cross-cultural awareness through understanding of social, political, economical, and historical influences on managerial practice. Methods include lectures, readings, videos, role-plays, and reports (written and oral). Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 170. Human Resources Management. 4 Units.

This course introduces the P/HR management area with its core of activities that include job analysis, performance evaluation, employee acquisition, employee and management development, and compensation and benefits. The influences of the equal employment and civil rights laws, wage, and hour laws, labor law and labor unions in organizational operations are studied. Prerequisite, may be taken concurrently: BUSI 109 with a "C" or better. Junior standing. (DVS)

BUSI 171. Coaching Strengths and Developing Leaders. 4 Units.

Coaching is a powerful approach to performance management that enhances employee engagement, helps achieve higher levels of productivity, and creates empowered cultures. By using coaching skills to lead people and manage performance, you can help individuals and employees generate better ideas, take action, and increase their self-accountability. Moreover, effective coaching motivates others to take responsibility for their growth and reach important goals. This course is designed to be highly experiential where students have the opportunity to learn the theoretical foundations underlying coaching, as well having both the experience being coached and coaching others. Prerequisites: BUSI 109.

BUSI 173. Entrepreneurial Management Practicum. 4 Units.

This course serves as the capstone in the Entrepreneurial Management concentration. Students will integrate what they've learned in the program and apply it to a major project under the guidance of the instructor. Project can include business plan development for the student's own idea or experiential consulting project for a company, nonprofit, or agency that involves some aspect of new business development. Prerequisites: BUSI 031, BUSI 090. Junior standing.

BUSI 174. Creating Effective Work Teams. 4 Units.

The purpose of the course is to provide students with an understanding of work team dynamics that enable them to develop skills to participate in and lead teams in the workplace. Because the focus is on teams, the course takes a "learning by doing" approach and involves numerous group activities designed to reinforce the material. Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 175. Leadership and Change. 4 Units.

Students examine the processes of deliberate organizational change as adaptations to both internal and external developments. The course covers criteria for effective change programs, strategic variables that affect change (e.g., power, communication, conflict), and technologies that produce change (e.g., consulting, training, research). Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 176. Managing Sport Enterprises. 4 Units.

The purpose of this class is to introduce students to management and leadership in the sport industry. The unique attributes and structures of sport organizations will be explained. The course then covers multiple frames of organizational analysis and applies these to sport settings. In addition, students learn managerial and leadership skills and develop a management philosophy suited to the sport industry. Prerequisites: BUSI 109 and junior standing.

BUSI 177. Sport Event and Facilities Management. 4 Units.

This course is a comprehensive investigation into the principles needed to design, implement, and manage all types of sport events and facilities. Planning, logistics, risk management, human resource management, and marketing of events and facilities are given special attention. Opportunities for the application of these principles are also provided. Prerequisite: Junior standing.

BUSI 178. International Commercial Law. 4 Units.

This course provides students with the opportunity to study the law that governs international contracts. The course reviews the legal environment of international business, international sales and commercial transactions, trade laws, and the regulation of the international market place. Ethical considerations in international contracting, commercial dispute resolutions, and import and export transactions are also examined. The emphasis of the course is on the recognition of legal problems and the discovery and application of appropriate principles of international and domestic law that may assist in resolving these problems. Prerequisite: BUSI 053 with a "C" or better. Junior standing.

BUSI 181. Strategic Management and Policy. 4 Units.

This course is an integrated analysis of the major functional areas of an enterprise, viewed primarily from the upper levels of management. The strategic management process provides the framework that formulates and implements objectives, policies and programs through which a company gains sustainable competencies and competitive advantage in the marketplace. Students participate in computer simulations, case analysis, and experimental exercises in order to develop skills in executive teamwork, to solve strategic problems and to present and defend recommendations. Prerequisites: BUSI 031, BUSI 033, BUSI 053, BUSI 100, BUSI 104, BUSI 105, BUSI 107, BUSI 108, BUSI 109.

BUSI 183. Administrative Internship. 1-8 Units.

The internship affords students the opportunity to combine administrative practice and classroom theory. Interns are placed with private, public or third sector agencies for a period of at least 40 hours per earned credit hour. In addition, the supervising instructor assigns academic work to complement the hands-on portion of the internship. Interested students contact the ESB Career Services Office or the office of the Associate Dean located in Weber Hall.

BUSI 186. Firm, Markets, and Environment: Theory and Application. 3 Units.

This course provides in-depth exposure to both the theory of the firm and a set of quantitative techniques that managers need to utilize in order to facilitate decision making and problem solving. The topics include demand theory and estimation, forecasting with econometric and time-series techniques, production and cost theory, theory of markets, capital budgeting, fiscal and monetary policy, and the global economic and financial environment. Prerequisites: ECON 053, ECON 055, and permission of the MBA Program Director. Senior standing.

BUSI 188. Data and Decisions. 3 Units.

This course introduces the fundamental concepts and techniques that analyze risk and formulate sound decisions in uncertain environments. The course examines statistical methods which interpret and analyze data that include sampling concepts, regression analysis, and hypothesis testing. Applications include investor management, portfolio analysis, quality control and inventory management, portfolio analysis, quality control and inventory management. This course emphasizes analytical techniques that are broadly applicable to business problems. Prerequisites: MATH 037, MATH 045 and permission of the MBA Program Director. Senior standing.

BUSI 191. Independent Study. 1-4 Units.

This course is primarily for advanced majors in business administration. An independent study proposal is submitted to and is approved by the student's faculty adviser, the instructor and the ESB Academic Standards Committee. Independent study is self-directed study by the student.

BUSI 200. Management Information Systems. 2 Units.

This course is an introduction to the concepts and skills needed to utilize information system resources in business management. The course examines tools for handling common business tasks at the personal, team, and enterprise levels. Business cases emphasize the management roles in evaluating information technology. Prerequisite: Admission to the MBA program.

BUSI 201. Financial and Managerial Accounting. 3 Units.

This is an intensive and managerially oriented course that focuses on the most salient aspects of financial and managerial accounting. The course includes modules on analysis and decision making using financial reports, cost identification and management, and identification and analysis of financial and managerial accounting issues. Prerequisite: Admission to the MBA program.

BUSI 205. Fundamentals of Finance. 3 Units.

The purpose of this course is to acquaint students with the basic concepts and analytical techniques applicable to identifying and solving financial management problems. The topics covered include financial markets and institutions, valuation of assets and associated problems in the valuation of the firm, the relationships between risk and return, capital budgeting and capital structure. Prerequisite: Admission to the MBA program.

BUSI 206. Data and Decisions. 2 Units.

This course reviews basic business statistics in a business context. It also introduces advanced techniques for quantitative business analysis. Students learn about methods for collecting and analyzing data to address business problems using commonly available computer software. In addition, students learn about reading and interpreting statistical reports from a decision makers' perspective. Prerequisite: Admission to the MBA program.

BUSI 207. Marketing Management. 2 Units.

This course is designed to explore the managerial aspects of the marketing function. Quantitative and qualitative analysis of the company, its customers and its competition, commonly used in solving marketing problems, are emphasized. The course is organized around the key marketing decision variables – target market selection, product, pricing and distribution and promotion as well as the various marketing processes of strategy formulation, organization and implementation. Prerequisite: Admission to the MBA program.

BUSI 208. Managerial Economics. 2 Units.

This course is designed to provide graduate business students with a rigorous exposure to selected theory from intermediate microeconomics, game theory and statistics, which can be applied to make sound managerial decisions in today's global business environment. It is assumed that students have an existing background in micro- and macroeconomics, differential calculus and statistics. Topics covered in this course include (but are not limited to): demand theory, production and cost theory, estimation of production and cost functions, theory of markets (perfect competition, monopoly, oligopoly, and monopolistic competition), and decision making under risk and uncertainty. Although these topics are presented in a quantitative manner, real-world application is stressed throughout the course. Prerequisite: Admission to the MBA program.

BUSI 209. Organizational Behavior. 2 Units.

This course is designed to provide students with (1) a broad understanding of the factors that influence human behavior in organizations and (2) a set of tools managers can use to direct employee behavior. The course's emphasis is on how to apply knowledge of organizational behavior to current problems in the workplace. Prerequisite: Admission to the MBA program.

BUSI 210. Business and Public Policy. 3 Units.

This course is about the public policy process and the role business plays in it. It examines national, regional and international policy issues of relevance to business and the larger society. It also involves an examination of the ethical dimensions of business decision-making. Prerequisite: Completion of Phase I of MBA Program or the permission of instructor and the MBA Director.

BUSI 211. Applied Business Principles. 17 Units.

This course is an applied and intensive overview of business administration and is completed in one semester. Topics include six academic modules covering information systems, data analysis and decision making, accounting, finance, marketing, and organizational behavior. The course is team taught by numerous faculty in the Eberhardt School of Business, each with their own area of specialization. This course may be waived upon completion with a "B" average or better in all of the following courses: BUSI 200, BUSI 201, BUSI 205, BUSI 206, BUSI 207, BUSI 208, and BUSI 209. Prerequisite: Admission to the MBA program.

BUSI 212. MBA Career Development Seminar. 1 Unit.

This course is designed to enable business students to clearly define their career objectives and available opportunities as it relates to the Pacific MBA. Through the course, MBA students are trained in the tactics and methods to conduct a successful job search and to prepare for multiple career transitions over the course of their entire business career. Prerequisite: Acceptance into the MBA Program.

BUSI 213. Ethics and Corporate Social Responsibility. 3 Units.

The purpose of this course is to analyze ethical dilemmas faced by individuals in the context of business decision making and identify the foundations upon which resolution might be possible, to contrast your own value system with those of others, and to understand the value systems behind your opinions, decisions, and actions. A second purpose is to improve students' abilities as managers to anticipate, analyze, respond to, and manage issues of social responsibility and ethics that are faced in careers. Students have an opportunity to consider challenges that arise across different business functions in both domestic and global markets. Sample topics may include compliance with a variety of laws, fair and unfair competition, responsibility to customers, shareholders, employees and the environment, insider trading, product safety and more. Prerequisite: BUSI 211 or 255 with a "B" or better, or admission to the MAcc or BSBA program. Graduate students from other non-business programs may enroll with permission of the Associate Dean in the Eberhardt School of Business.

BUSI 214. Negotiation. 2 Units.

The purpose of this course is to understand the theory and processes of negotiation as it is practiced in a variety of settings. This course is designed to be relevant to the broad spectrum of negotiations problems that are faced by managers and individuals. Thus, the content is relevant to students interested in marketing, entrepreneurship, consulting relationships, international management or mergers and acquisitions. In addition, the course emphasizes negotiations that occur in the daily life of the manager. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 215. Taxation of Business Entities. 3 Units.

The primary focus of this course is on the federal income tax laws and regulations related to the formation, operation, and dissolution of C-corporations, S-corporations, and partnerships. The laws and regulations related to distributions made by these entities to shareholders and partners are also included. A second focus is on the tax laws and regulations related to taxation of gifts made by individuals and estates left by individuals. Prerequisites: BUSI 115 or equivalent and admission to the Master of Accounting or the BS in Accounting/Master of Accounting.

BUSI 216. Professional Accounting Research. 3 Units.

This course has two objectives: The first objective is to develop critical thinking skills, and therefore problem solving and decision making skills, within the context of professional accounting. This objective is achieved through research and analysis of complex accounting situations and cases. The second objective is to enhance students' technical communication skills; skills that are necessary to achieve and maintain successful careers in the accounting profession. The two objectives are integrated throughout the course. Prerequisites: 0BUSI 113B, and BUSI 115 or equivalent courses and acceptance into the MAcc or the BSAcc/MAcc.

BUSI 217. Ethics for Professional Accountants. 3 Units.

Ethical reasoning, integrity, objectivity, independence, and core values are applied to professional issues in accounting via lectures, case analysis, and independent research. Prerequisites: BUSI 119 and PHIL 027, or equivalent courses and admission into the MAcc program or BSMA program.

BUSI 218. Advanced Financial Accounting Graduate Level. 3 Units.

This course provides a thorough study of accounting for business combinations and preparation of consolidated financial statements for a parent corporation and one or more subsidiaries. We also examine several other accounting topics including: state and local governments, colleges and universities, health care organizations, partnerships, segment reporting, foreign currency transactions, and the movement towards harmonization of accounting standards worldwide. Prerequisites: BUSI 113B or equivalent and admission to the MAcc or the BSBA.

BUSI 219. Graduate Auditing Seminar. 3 Units.

This course presents advanced problems in the application of auditing standards; internal control evaluations; applications of statistics; audits of EDP systems; and auditor's ethical, legal, and reporting obligations. This class includes the following topics: the history of auditing leading to SOX, accounting ethics, fraud, internal auditing and risk management, sampling and IT auditing. These topics represent the most critical elements for understanding the current state of auditing. Prerequisites: BUSI 119 or equivalent and admission to the MAcc or BSMA.

BUSI 220. Corporate Finance. 3 Units.

This advanced course in financial management introduces a set of analytical tools needed to make sound corporate decisions in such areas as capital budgeting, capital structure and dividend policy. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 221. Entrepreneurial Finance. 3 Units.

Students analyze in-depth the financial issues that face a business start-up. Specific attention is paid to the acquisition of financing for new ventures and the financial management of new and growing businesses. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 222. Student Investment Fund. 3 Units.

Student Investment Fund (SIF) is operated entirely by students, and it allows them to gain hands-on, real world experience in managing an investment fund with substantial market value. Students perform sector analyses as well as financial analyses of a wide array of securities, and as a group have to determine the fund's sector allocation and stock/bond/cash allocation. SIF, while maintaining a well-diversified portfolio, strives to outperform the market (S&P 500). Prerequisite: BUSI 211 or BUSI 255 with a "B" or better and permission of instructor.

BUSI 223. Investment Management. 3 Units.

This course teaches students a set of analytical tools necessary to evaluate the profitability of a vast array of financial assets such as stocks, bonds, options and financial futures. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 225. Investments/Portfolio Analysis. 3 Units.**BUSI 226. Financial Statement Analysis. 3 Units.**

This course familiarizes students with the types of financial statements and analysis processes used by bankers and analysts. This course also provides students with a basic understanding of the many issues bankers and analysts face in understanding a company through its financial statements. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better or permission of Associate Dean.

BUSI 227. Forensic Accounting and Fraud Investigation. 3 Units.

This course provides a solid foundation for building skills in forensic accounting techniques, including gathering, interpreting, and documenting evidence. This course examines the investigative techniques used by accountants to conduct forensic examinations as well as the common schemes and techniques used to commit fraud. The skills acquired will enable students to assist businesses in detecting, investigating, documenting, and preventing fraud. Prerequisites: BUSI 119 and admission to the Master of Accounting or the BS in Accounting/Master of Accounting.

BUSI 228. Supply Chain Financial Management. 3 Units.

This course takes an accounting and financial perspective towards the supply chain. Although it includes some elements common to operations courses the main focus in the effective analysis of cost in the supply chain. This course explores the two critical and interrelated elements of managing a successful and cost-effective supply chain operation. First, the course demonstrates the application of corporate finance to decisions faced by operations finance managers. Second, the course addresses a set of competencies that are critical if a firm is to consistently achieve its financial and operational targets. These competencies include putting the theory of performance management into practice in the day-to-day operation of real firms, and effectively integrating financial sustainability metrics into the firm's supply chain financial strategy. Prerequisites: BUSI 113B and admission to the Master of Accounting or the BS in Accounting/Master of Accounting.

BUSI 230. Ethics in the Investment Profession. 1 Unit.

This course presents the fundamental principles applicable to the investment profession and the key concepts of the CFA Institute Code of Ethics. It also addresses why ethics matter to the investment profession and the importance of making ethical decisions using an ethical decision-making framework. Prerequisites: Admission to Master of Finance program.

BUSI 231. Quantitative Methods in Finance. 3 Units.

Empirical investigation of properties of financial data, such as basic probability theory, matrix algebra, ordinary least squares, and maximum likelihood estimation. Provides the basis for portfolio optimization by focusing on the estimation and testing of financial factor models. Prerequisites: Admission to Master of Finance program.

BUSI 232. Economics for Finance. 3 Units.

This course describes how individuals and firms make financial decisions, and how those decisions might deviate from those predicted by traditional financial or economic theory. Students explore the existence of psychological biases in financial decision-making, and examine the impacts of these biases in financial markets and other financial settings. The course examines how the insights of behavioral finance complements the traditional finance paradigm. It will also introduce students to behavioral and experimental methodologies used in finance, economics and other disciplines. Prerequisites: Admission to Master of Finance program.

BUSI 233. Fixed Income Securities. 3 Units.

This course covers valuations of a wide range of fixed income securities and derivatives including zero coupon bonds, coupon bonds such as Treasury bonds and corporate bonds, forwards and options on fixed income securities, callable bonds, interest-rate swaps, floating-rate notes, mortgages, and mortgage-backed securities. The course also focuses on yield curve construction, duration and convexity, and formal term structure models. Prerequisites: BUSI 231 - Quantitative Methods in Finance & BUSI 232 - Economics for Finance.

BUSI 234. Derivative and Alternative Investment. 3 Units.

This course introduces basic concepts underlying derivatives and the general arbitrage framework, as well as valuation of forwards, futures, options, and swaps. In addition, students are expected to be aware of fee structures, due diligence, and issues in valuing alternative investments, such as hedge funds, private equity, real estate, and commodities. Prerequisites: BUSI 231 - Quantitative Methods in Finance & BUSI 232 - Economics for Finance.

BUSI 241. Marketing Research. 3 Units.

Students study the concepts and techniques useful in the solution of marketing problems and in the identification of marketing opportunities. Emphasis is given to the design of information acquisition and to the evaluation and interpretation of research findings. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 245. Customer Relationship Management. 3 Units.

This course explores the process of understanding, creating and delivering value to targeted business markets and individual customers. It relies upon assessment of value in the marketplace, and it provides a means of gaining an equitable return on value delivered and enhancing a supplier firm's present and future profitability. It also provides students with the knowledge and skills necessary to perform consumer analyses that can be used to understand markets and to develop effective marketing strategies. Prerequisite: BUSI 211 with a "B" or better.

BUSI 246. Marketing of Services. 3 Units.

This class explores the theory and strategies that drive service consumption. Students are exposed to the unique characteristics of marketing services that include the importance of the physical environment to service encounter success, the creation of customer satisfaction, the delivery of service quality and value, and the development of strategies to overcome service failure. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 247. Consumer Behavior. 3 Units.

This interdisciplinary course discusses the customer as the focus of the marketing system. Knowledge about the customer behavior, obtained through the application of a series of analytic frameworks and tools, is presented as the basis for marketing decisions at both the strategic and tactical levels. Central focus of the course is the analysis of customer decision-making processes and an understanding of the customer activity cycle or consumption chain. Methods to build customer satisfaction and loyalty through relationship marketing are stressed. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 250. Health Finance: Health Insurance. 3 Units.

Students examine the theory and practice of health insurance in the United States. Students who complete this course understand the history and institutional framework of health insurance, understand how health insurance operates, and are able to assess the efficiency and equity of healthcare finance. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 251. International Healthcare Systems. 3 Units.

This course is an international overview of healthcare finance and delivery that familiarizes students with healthcare finance and delivery around the world. Students develop critical analytical skills to enable them to compare and contrast health systems, identify relative strengths and weaknesses, and assess the possibilities for structural reform of the U.S. healthcare system. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 252. Healthcare Law. 3 Units.

Students analyze and learn the application of statutes, regulations, case law and policies that affect the health care system in the U.S. Upon completion of this course students understand the roles of the legal, legislative and administrative systems in health care, are able to discuss critically important legal, ethical and policy issues in health care, and are able to recognize situations that may occur in health systems management that require consultation with legal counsel. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 254. Health Economics. 4 Units.

This course applies the tools of microeconomics to the study of health care. It provides an analysis of how decisions are made by health care providers, consumers, and third parties responsible for payment (e.g. health insurers). The course is built around the individual's demand for health care and the supply of services by doctors and hospitals. Topics covered include health insurance, managed care and industry competitions, the pharmaceutical industry, the role of the government as a provider of care, long-term care, international health comparisons, and cost-benefit analysis/cost-effectiveness analysis. Prerequisite: BUSI 211 with a "B" or better or concurrent with BUSI 255.

BUSI 255. Applied Business Principles. 14 Units.

This course is an applied and intensive overview of business administration and is completed in one semester. Topics include six academic modules covering information systems, data analysis and decision making, accounting, finance, marketing, and organizational behavior. The course is team taught by numerous faculty in the Eberhardt School of Business, each with their own area of specialization. This course may be waived upon completion with a "B" average or better in all of the following courses: BUSI 200, BUSI 201, BUSI 205, BUSI 206, BUSI 207, and BUSI 209. Prerequisite: Admission to the MBA program.

BUSI 263. International Finance. 3 Units.

This course provides students with a conceptual framework for analyzing key financial decisions faced by multinational corporations. The major focus of this class is on spot exchange markets, forward exchange markets, the balance of payments, exchange rate determinations, hedging strategies, financing alternatives, transfers of international payments, and international bonds and equities investment and diversification. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 265. Global Marketing Strategy. 3 Units.

This course develops students' decision-making skills in the complex and fast changing international marketplace. Emphasis is placed on the frameworks and techniques used to decide which countries offer potential markets for products, how and to what degree the components of the marketing mix must be customized to an international market, and which strategies are best suited to entering a country. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 268. Global Business Competition. 3 Units.

Today, all levels of business operations are becoming global. Business people must consider additional parameters when they enter the global sphere. The rules of the game such as laws, customs, theories, and business practices may be different. This course works on business problems and strategies within the global environment in which U.S. businesses compete. The key objective of this course is to analyze the operation of global firms, to analyze various types of entry strategies into foreign countries, impacts on host and home countries, and the powerful flexibility of global systems. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better or permission of instructor and the MBA Director.

BUSI 269. Comparative Management. 3 Units.**BUSI 270. Human Resource Management. 3 Units.**

This course explores research, theory, and practical applications to administrative problems in human resource management. The course provides students with an understanding and appreciation of: strategic HRM, HRM law, job analysis and design, employee recruitment, selection and placement, training and development, performance evaluation, compensation and benefits, labor relations and collective bargaining, safety and health, international HRM, HRM computer simulation, HR information/management systems and other HRM technological innovations.

BUSI 274. Managing Quality/Productivity. 3 Units.

The purpose of this course is to recognize the essence of an organization as its operations, or as its production and service delivery. Topics include the life cycle of operations and supply chain strategies for goods and services, the integration of and information flows between business functions, and the challenges of the globalization of operations and supply chain choices. Students apply analytical methods to develop, deliver, and improve production systems in a "real world" field experience. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 275. Technology and Innovation. 3 Units.

The process of taking science and technology to the marketplace has taken on strategic importance to company leadership in many industries. This course provides students with concepts, frameworks and tools for managing technology and innovation. How can companies identify the major developments in science and technology that affect them directly and indirectly? What avenues are available to maintain technological leadership, and how can they be integrated into a company's overall objectives? What global strategies are available to develop technology and take it to the marketplace? Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 276. Entrepreneurial Management. 3 Units.

This course is designed to integrate the functional knowledge students have acquired in their first semester as an MBA student and to teach them how to apply it within innovative and entrepreneurial business settings that call upon managers to make decisions and plans under conditions of uncertainty. The focus on the entrepreneur and entrepreneurial management reflects two considerations. The first is the growing recognition of the critical importance of entrepreneurial activities in capitalist economics. The second is that it introduces students to a set of opportunities that most of them encounter in their careers. New companies as well as innovative businesses at larger firms often look for businesspeople with the perspective and skills needed to thrive in innovative business environments and the aim is to help prepare students for such opportunities. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better. Graduate students from other programs may enroll with permission of the Associate Dean in the Eberhardt School.

BUSI 277. Management Skills. 3 Units.

Students examine and develop key managerial and leadership competencies needed to be successful in organizations. Emphasis will be placed on self-assessment and development of existing skills in working with others via teamwork, conflict resolution, and leadership. Prerequisite: Graduate Standing.

BUSI 278. International Entrepreneurship. 3 Units.

This course provides the entrepreneur with a broad view of the factors underlying cross-national and cross-cultural business success. The emphasis is on concepts, techniques and factual knowledge useful for a career in international and global business management and entrepreneurship. This course draws on the experiences of small as well as large entrepreneurial firms, in both the manufacturing and service sectors from all over the world in new firm creation and/or adaptation in difference countries and the global economy. Prerequisite: BUSI 211 or permission of instructor and Associate Dean for Graduate Studies.

BUSI 279. Leadership. 2 Units.

This course utilizes the research and practice of recent years that concerns situational leadership and transformational leadership. The class emphasis will be experiential. Emphasis is placed on the consensus building, values alignment and vision building. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 281. Strategic Management. 3 Units.

The vast majority of newly formulated business strategies fail in their implementation. In some cases they end up as faint, half-hearted replicas of the original plans. In other cases they simply never materialize at all. This course uses the case method in a multinational corporate setting to address the managerial challenge of strategy implementation by examining the organizational elements that must be drawn into line to support a strategy, and by examining the immense difficulties involved in changing an organization. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 283. Administrative Internship. 1-3 Units.**BUSI 291. Graduate Independent Study. 1-4 Units.****BUSI 293. Special Topics. 4 Units.****Other Business Administration Courses****MBAS 200. Business Statistics. 2 Units.**

This course covers the basic principles and implementation techniques of descriptive statistics, sampling, statistical inference, analysis of variance, and regression analysis. An understanding of how these tools can support managerial decision making is emphasized.

MBAS 203. Decision Making and Analytics. 3 Units.

This course focuses on how to plan, collect, analyze, synthesize, visualize, and interpret data to support and guide decision making in businesses and organizations. Coverage of the class include both theoretical and applied computer-based topics.

MBAS 205. Macroeconomics for Managers. 2 Units.

Topics in macroeconomics and microeconomics, including market equilibrium, monetary and fiscal policy, profit maximization, and market future.

MBAS 208. Managerial Economics. 2 Units.

This course covers demand and cost analysis, pricing policies, and selected topics of economic analysis as they relate to business policies. Prerequisite: MBAS 205 with a C or better.

MBAS 210. Business Law for Managers. 2 Units.

This course covers laws governing and relating to commercial transactions, relationships, organizations and ethics with emphasis on the application of law in decision making.

MBAS 225. Measuring and Maximizing Financial Performance. 2 Units.

This course is an introduction to the concepts of financial accounting and financial management. The content of this course includes preparation and analysis of financial statements. Also covered are the time value of money, risk and return, and corporate financing choices.

MBAS 226. Managerial Accounting. 2 Units.

This course discusses management accounting as part of the firm's information system, drawing on modern cost accounting and budgeting systems for planning and controlling business operations. Prerequisite: MBAS 225 with a C or better.

MBAS 230. Accounting for Managers. 3 Units.

Accounting for managers is an intensive and managerially oriented course that focuses on the most salient aspects of financial and managerial accounting. The course includes modules on analysis and decision making using financial reports, cost identification and management, and identification and analysis of financial and managerial accounting issues.

MBAS 240. Financial Management. 3 Units.

The purpose of this course is to introduce students to the concepts and analytical techniques applicable to identifying and solving financial management problems. The topics covered include financial markets and institutions, valuation of assets and associated problems in the valuation of the firm, the relationships between risk and return, capital budgeting and capital structure.

MBAS 245. Corporate Financial Management. 2 Units.

This course is the analysis of corporate investment and financing decisions, including capital budgeting, capital structure, and working capital management. Prerequisite: MBAS 200 with a C or better.

MBAS 255. Marketing Management. 3 Units.

This is a case course in marketing management. Marketing entails planning and executing the conception, pricing, promotion and distribution of ideas, goods and services. Marketing is the core of an operating business; a guiding organizational philosophy surrounding interfacing with customers and delivering superior value. It starts with identifying and measuring customers' wants and needs, assessing the competitive environment, selecting the most appropriate customer targets and developing marketing strategy along with an implementation program that delights consumers and benefits the organization and its stakeholders. This course is designed to explore the managerial aspects of the marketing function. An emphasis will be placed on the quantitative and qualitative analysis of the company, its customers and competition.

MBAS 260. Marketing Strategy and Planning. 2 Units.

This course emphasizes application of strategic planning in marketing to achieve competitive advantage. It also examines the role of strategic planning in developing, effective marketing programs that enhance the overall performance of the firm. Prerequisite: MBAS 225 with a C or better.

MBAS 265. Health Services Management. 3 Units.

The emphasis in this course is integrating theoretical and applied research findings from the management, social science, policy, and health services literatures in order to provide students with a basic understanding of how health care organizations work. Health applications will also be examined through analysis of health cases and class discussions. The course surveys the internal and external environments that confront health care managers as well as the tools and skills that are essential for managing health organizations and systems.

MBAS 266. Health Insurance: Health Finance. 3 Units.

A survey of the theory and practice of health insurance in the United States. The purpose of this course is to provide students with an understanding of how healthcare is financed. The course includes institutional, historical and theoretical approaches to managed care and health finance. There is an emphasis on empirical studies to describe how health insurance works.

MBAS 280. Leadership and Management of Organizations. 2 Units.

This course helps students develop knowledge and skills to enhance their professional development and to become effective leaders. Students will understand trends in contemporary organizations, enhance their self-awareness, and refine their interpersonal skills, and apply these skills to improve their work effectiveness.

MBAS 281. Managing the Total Enterprise. 2 Units.

Business Simulation focusing on the need to integrate strategic and operational concepts, issues and the decisions in moving technological enterprise from start-up to success.

MBAS 282. Managing Technology Innovation. 2 Units.

This course focuses on the role of technology and innovation in building, sustain and leveraging competitive advantage for firms. It examines how industries are transformed by new technologies of technology. This course also touches upon the challenges of managing innovation in firms. Prerequisites: MBAS 205 and MBAS 225 with a C or better.

MBAS 283. Entrepreneurial Management. 2 Units.

Students draw on their entire business education and practical experience and bring it to bear upon a plan for launching a new venture. Working in small teams, students research a new project or service; prepare marketing, sales and operation plans; and make financial plans.

MBAS 284. Operations Management. 2 Units.

This course is an introduction to the field of production and operations management (POM). Production and operations activities such as forecasting, capacity planning, inventory control, scheduling, and ensuring quality are discussed from the supply chain perspective. The philosophies and characteristics of lean operations and responsive manufacturing/service systems are highlighted. Prerequisite: MBAS 200 with a C or better.

MBAS 285. Leading and Managing Organizations. 3 Units.

This course is designed to provide students with (1) a broad understanding of the factors that influence human behavior in organizations and (2) a set of tools managers can use to direct employee behavior. The course's emphasis is on how to apply knowledge of organizational behavior to current managerial problems in the workplace.

MBAS 286. Innovation and Entrepreneurial Management. 3 Units.

This course introduces students to the management of innovation and entrepreneurship in a wide variety of organizations. It is designed to provide students with (1) an understanding of the sources of innovation and other entrepreneurial opportunities, (2) the processes by which these are pursued and developed into viable organizations and (3) the skills, tools, and frameworks required to successfully manage the introduction of innovation and pursue new opportunities. The course emphasizes the applicability of these skills to a wide variety of organizational settings, including startups, mature firms, social enterprise, and the public sector.

MBAS 287. Power, Conflict, and Negotiations. 3 Units.

The premise of this course is that power dynamics are fundamental to the work of all leaders and managers in organizations – e.g., in how organizations are designed, in what is valued and rewarded, in how leaders take action, in how decisions happen, and why outcomes often vary from intentions. The coursework focuses on increasing your ability to analyze, explain, evaluate, and utilize power dynamics in organizations. It will include the theory and processes of negotiation as it is practiced in a variety of settings.

MBAS 288. Service Design and Operations Management. 3 Units.

The United States is considered to be a service-based economy, with services contributing 79% of the total GDP. The service sector is the largest employer spanning businesses in information, education and health, leisure and hospitality, retail, utilities, finance and banking, transportation and warehousing, professional and business services as well as government services. This course explores the processes and systems involved in managing employees and customers in the delivery of exceptional customer service and value. Students will be exposed to techniques, technologies and tools that facilitate operations management in service and product related industries with a primary focus on the service sector. The course focuses on understanding the strategic role of operations management and system design in creating a substantial competitive advantage for a business.

MBAS 289. Strategic Management. 2 Units.

This course provides an integrative study of the functions and responsibilities of top management and the strategies that affect the character and success of the total enterprise. Case studies and assigned readings are used to develop the viewpoint of top management charged with responsibility for the enterprise as a whole. Attendance at the first class is required. Prerequisites: MBAS 205, MBAS 208, MBAS 225, MBAS 226, MBAS 245, MBAS 260 with a C or better.

MBAS 290. Strategic Management. 3 Units.

This course focuses on the processes by which managers' position their businesses to create and sustain an advantage relative to rivals in the face of uncertainty, rapid change, and competition. Strategy involves understanding the utility of different choices and tradeoffs – choosing what not to do is as important as choosing what to do. As a result, the course will expose you to a variety of tools, frameworks, and concepts for analyzing a firm's strategic position and the environment in which it is operating. By focusing on the factors that make some strategic positions strong and viable, students will develop the ability to evaluate the effects of changes in resources and capabilities, industry forces, macro-environmental forces, and technology on industry structure and firm behavior and, in turn, on a firm's opportunities for creating, capturing and sustaining superior value relative to rivals.

MBAS 293. Special Topics. 4 Units.**MS Business Analytics Courses****MSBA 210. Business Analytics. 3 Units.**

Analytics involves the extensive use of computer applications, data of various sizes, and quantitative methods to inform managerial decisions. Students will learn essential theories, concepts, methodologies, and use leading computer tools including data visualization to perform analysis and interpretation on real world data.

MSBA 220. Business Concepts and Applications of Analytics. 3 Units.

This course reviews key concepts in the major business disciplines such as accounting, finance, management, operations, marketing, and how analytics can be applied in these disciplines.

MSBA 230. Database Management Systems with SQL and R. 3 Units.

This course provides a comprehensive introduction to database modelling and design. In this course the language of relational databases: Structured Query Language (SQL) will be covered comprehensively. This course will also explore the origins of NoSQL databases and the characteristics that distinguishes them from traditional relational database management systems.

MSBA 232. Programming for Data Science. 1 Unit.

In this course, students will learn the fundamentals of a data-oriented programming language such as Python. The learning objectives will be achieved by performing multiple small assignments designed for beginners of programming and system development.

MSBA 235. Research Methods and Ethics. 3 Units.

In this course, students will learn the entire typical research process, including formulation of intent and design, methodology, statistical techniques, management of data, legal and organizational issues, and ethical considerations.

MSBA 240. Advanced Business Analytics. 3 Units.

This course covers advanced business analytics techniques. Topics include data preparation, predictive analysis, association, visualization, and others. Enterprise level software will be used to analyze large real-world data.

MSBA 250. Applied Business Analytics. 3 Units.

This course provides students an opportunity to apply analytics in various business disciplines, such as marketing, finance, accounting, management, operations, and others.

MSBA 251. Marketing Analytics. 3 Units.

This course will serve as an introduction to marketing analytics. Students will study various tools for generating marketing insights from empirical data in areas such as segmentation, targeting and positioning, satisfaction management, customer lifetime analysis, customer choice, and product and price decisions using conjoint analysis. This is an experiential learning course where students will define and refine KPIs, analyze business requirements, select appropriate analytics platforms, and use data to solve real-world business problems. Students will learn how analytics can be used to optimize all areas of marketing including consumer behavior prediction, advertising targeting and optimization, social media, mobile and digital platforms/applications.

MSBA 260. Leading the Analytics Organization. 3 Units.

Every successful organization needs a strategy to connect its mission, vision and goals to employees, customers, and other entities. Big data offers new and exciting ways to learn more about short term and long-term firm level decisions, customer wants and needs, employee attraction and retention, and sound, evidence based decision making. In this course, you will learn tools and frameworks for data-driven decision making and how to lead your organization with the information available to you.

MSBA 265. Special Analytics Topics. 3 Units.

This class will familiarize students with a broad cross-section of models and algorithms for machine learning. In this course students will be able to make sense of data using data cleaning and various visualization techniques, as well as data mining algorithms, on real world data that is both interesting and relevant. Students will also learn the fundamentals of NLP and will be able to perform different text processing models on document and social media text.

MSBA 285. Capstone Project I. 3 Units.

In the Capstone Project course, each student will complete a comprehensive business analytics project on a selected industry or business discipline, such as agriculture, wine, healthcare, environmental, social media, marketing, HR, finance, accounting, etc. The course is divided into two parts. The main tasks in Part 1 include project topic selection, problem identification, project planning and design, and data collection.

MSBA 286. Capstone Project II. 3 Units.

In the Capstone Project course, each student will complete a comprehensive business analytics project on a selected industry or business discipline, such as agriculture, wine, healthcare, environmental, social media, marketing, HR, finance, accounting, etc. The course is divided into two parts. The main tasks in Part 2 include data analysis, project revision, report writing, report publication, and project presentation.

Master of Accounting

<https://www.pacific.edu/academics/schools-and-colleges/eberhardt-school-of-business.html>

Phone: (209) 946-2476

Location: Weber Hall

Programs Offered

Master of Accounting (MAcc)

Bachelor of Science in Accounting/Master of Accounting Dual Degree Program

Learning Goals, Objectives, and Outcomes

The goals of the Eberhardt School of Business graduate programs are to produce graduate students who possess business knowledge and skills, who are able to apply their knowledge and skills in a global business setting, who are able to work as part of a team, and who are able to communicate effectively.

The specific objectives and outcomes for the Master of Accounting and the Bachelor of Science in Accounting/Master of Accounting Dual Degree Program are:

1. Technical competency and professional knowledge.

Each student demonstrates technical proficiency and professional knowledge in the areas of financial accounting, managerial accounting, financial statement auditing, taxation, and financial statement analysis.

2. Critical thinking

Each student demonstrates the quantitative reasoning and critical thinking skills necessary to gather and analyze the information necessary to resolve complex business issues, with particular emphasis on issues facing financial statement preparers and users.

3. Ethics

1. Each student recognizes ethical weaknesses in accounting situations and can propose effective solutions to those weaknesses.

2. Each student understands how corporate governance, risk management, and internal controls impact ethical behavior.

4. Interaction and communication

1. Each student can work effectively as part of a team either as a leader or participant, and can effectively collaborate and negotiate within the team.

2. Each student can communicate effectively in formats appropriate to the situation and audience.

Master of Accounting

The Master of Accounting is designed for students who wish to apply for licensure as a Certified Public Accountant. The coursework includes six units of ethics, including professional accounting ethics, and the degree meets California's requirements for an additional 20 units of accounting study. Students who have an undergraduate degree in accounting complete the program in two semesters. Students who do not have an undergraduate accounting degree typically will spend three to four semesters completing the coursework necessary for licensure as a Certified Public Accountant.

Bachelor of Science in Accounting/Master of Accounting Dual Degree Program

The Dual Degree Program is a five-year program designed for Pacific's undergraduate accounting students who wish to apply for licensure as a Certified Public Accountant. The program begins in the third undergraduate academic year with a broad foundation in business and accounting, and finishes with a specific focus in professional accounting. At the end of the fifth year successful graduates will be awarded both a Bachelor of Science in Accounting and a Master of Accounting, and will meet the current education requirements for California licensure as a Certified Public Accountant.

Graduate Admission Requirements

- Admission to the Eberhardt School of Business Master of Accounting program is competitive and based on criteria which indicate a high promise of success. Performance in prior coursework and standardized test scores are strong considerations in the admission decision.
- A U.S. bachelor's degree or its international equivalent is required for admission. The Graduate Admissions Committee gives equal consideration to all undergraduate majors in the admissions process.
- Admission decisions are made on a rolling basis. Applicants are notified immediately when decisions have been made.
- The completed application packet must be submitted before the Admissions Committee can render a final decision. The required materials include:
 - The completed application form and supporting materials.
 - Transcripts from all undergraduate, graduate and professional schools attended.
 - Two letters of recommendation written by people knowledgeable of the applicant's qualifications for graduate work.

Graduate Program Prerequisites

Although there are no required program prerequisites, Master of Accounting students who have not taken at least two intermediate accounting courses will be unable to complete the Master of Accounting in two semesters.

Bachelor of Science in Accounting/Master of Accounting Dual Degree Program Requirements

Students must complete a minimum of 150 units with a Pacific cumulative and school/program grade point average of 2.0 in order to earn the bachelor of science in accounting degree. Students must each a grade point average of 3.0 in all graduate courses to earn the master of accounting degree.

Admission to the Dual Degree Program

Current Pacific students, or admitted transfer students who have completed the Junior Core with a 3.0 overall GPA and a 3.0 Accounting GPA are eligible to begin the dual degree program. Students receiving a C- or below in any of the Junior Core courses do not qualify for admission into the dual degree program. The Junior Core consists of:

ECON 053	Introductory Microeconomics	4
ECON 055	Introductory Macroeconomics: Theory and Policy	4
MATH 037	Introduction to Statistics and Probability	4
MATH 045	Introduction to Finite Mathematics and Calculus	3
BUSI 023	Business Communications	4
BUSI 031	Principles of Financial Accounting	4
BUSI 033	Principles of Managerial Accounting	4
BUSI 100	Management Information Systems	4
BUSI 105	Financial Management	4
BUSI 113A	Intermediate Accounting I	4
BUSI 113B	Intermediate Accounting II	4

Students should apply for admission into the dual degree program at the beginning of the spring semester of their junior year.

II. Pre-professional Skills Requirements

Public Speaking

COMM 027	Public Speaking *	3
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Mathematics ¹

MATH 037	Introduction to Statistics and Probability	4
MATH 045	Introduction to Finite Mathematics and Calculus *	3

Computer Literacy

COMP 025	Computers and Information Processing *	4
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Economics

ECON 053	Introductory Microeconomics *	4
ECON 055	Introductory Macroeconomics: Theory and Policy *	4

* These courses are also part of the Pacific General Education Program, and can be counted toward the University General Education requirements.

¹ Students must complete MATH 037 and MATH 045 with a C or better.

III. Core Requirements

BUSI 010	Dean's Seminar	1
BUSI 031	Principles of Financial Accounting	4
BUSI 033	Principles of Managerial Accounting	4
BUSI 053	The Legal and Ethical Environment of Business	4
BUSI 100	Management Information Systems	4
BUSI 105	Financial Management	4
BUSI 107	Marketing Management	4

BUSI 108	Introduction to Business Analytics	4
BUSI 109	Management and Organizational Behavior	4
BUSI 110	Career and Development Seminar	1

Note: 1) BUSI 228 below is substituted for BUSI 104. 2) BUSI 281 below is substituted for BUSI 181. 3) BUSI 218 below is substituted for BUSI 113C.

IV. Experiential Learning

Complete a minimum of three units by selecting one or more of the following experiential learning courses:

BUSI 122	Student Investment Fund (SIF)
BUSI 143	Product Innovation
BUSI 147	Consumer Behavior
BUSI 168	
BUSI 173	Entrepreneurial Management Practicum
BUSI 183	Administrative Internship
BUSI 187A	Sport Management Internship

For experiences such as undergraduate research, or community-based consulting, students may arrange for an independent study course under the guidance of a faculty member.

BUSI 191	Independent Study
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When part of a study abroad experience, the following two courses fulfill the experiential learning requirement:

INTL 151	Cross-Cultural Training I
INTL 185	SIS Capstone

V. Accounting Requirements

BUSI 111	Accounting Information Systems	4
BUSI 113A	Intermediate Accounting I	4
BUSI 113B	Intermediate Accounting II	4
BUSI 115	Tax Accounting	4
BUSI 117	Cost Accounting	4
BUSI 119	Auditing	4
BUSI 157	Commercial Law	4

VI. Master of Accounting Requirements

A minimum of 30 graduate units with a Pacific grade point average of 3.0 is required. All courses must be completed with a C (2.0) or higher.

BUSI 213	Ethics and Corporate Social Responsibility	3
BUSI 215	Taxation of Business Entities	3
BUSI 216	Professional Accounting Research	3
BUSI 217	Ethics for Professional Accountants	3
BUSI 218	Advanced Financial Accounting Graduate Level	3
BUSI 226	Financial Statement Analysis	3
BUSI 227	Forensic Accounting and Fraud Investigation	3
BUSI 228	Supply Chain Financial Management	3
BUSI 277	Management Skills	3
BUSI 281	Strategic Management	3

Master of Accounting

Students must complete a minimum of 30 units with a cumulative grade point average of 3.0 in order to earn the Master of Accounting degree.

I. Course Requirements

BUSI 213	Ethics and Corporate Social Responsibility	3
BUSI 215	Taxation of Business Entities	3
BUSI 216	Professional Accounting Research	3
BUSI 217	Ethics for Professional Accountants	3
BUSI 218	Advanced Financial Accounting Graduate Level	3
BUSI 226	Financial Statement Analysis	3
BUSI 227	Forensic Accounting and Fraud Investigation	3
BUSI 228	Supply Chain Financial Management	3
BUSI 277	Management Skills	3
BUSI 281	Strategic Management	3

Business Administration Courses

BUSI 100. Management Information Systems. 4 Units.

This course is an introduction to the concepts and skills needed to utilize information systems resources. The course focuses on the role of information systems in management function with an emphasis on end-user computing, that includes the role of users in information system planning and design. Topics include information systems technology, applications and development. Students gain experience with spreadsheet, data base and network applications. Prerequisite: COMP 025 or COMP 051.

BUSI 104. Operations Management. 4 Units.

Students analyze the production and operations systems in the organization and application of quantitative methods in solution of production and operations problems. A major emphasis is on managerial and economic implications. Prerequisites: MATH 037 and MATH 045, both with a "C" or better, BUSI 031, BUSI 033, ECON 053, and ECON 055, and an acceptable computer course. Junior standing.

BUSI 105. Financial Management. 4 Units.

This course introduces financial instruments and institutions from the perspective of the financial management of the firm. Tools of financial analysis and planning as well as principles of short-term and long-term financing are developed as they relate to profit-ability and liquidity. Prerequisites: MATH 037 and MATH 045 both with a "C" or better, BUSI 031, ECON 053, and ECON 055. Junior standing.

BUSI 106. Sport Analytics. 4 Units.

Analytics is the discovery, interpretation, and communication of meaningful patterns in data. Sports Analytics refers to the use of data and quantitative methods to measure performance and make decisions to gain advantage in the competitive sports arena. Teams in basketball, football, ice hockey and soccer have followed baseball's lead and developed analytics departments to support a myriad of decision-making on and off the field. This course explores recent trends in sport analytics from a practical point of view. Students will learn the skills and ideas to create analytics of potential value to sport organizations. The course content will cover topics such as data management, statistic data analysis, modeling, and decision making in various sport settings. Prerequisites: BUSI 108 and junior standing.

BUSI 107. Marketing Management. 4 Units.

BUSI 107 is an introduction to the institutions, techniques, policies and procedures utilized in the planning and performance of the activities which direct the flow of goods and services from producers to consumers. An emphasis is placed on the managerial process of decision-making in the setting of marketing strategy. Prerequisite: ECON 053. Sophomore standing.

BUSI 108. Introduction to Business Analytics. 4 Units.

This course is designed as an introduction to the field of business data analytics. Analytics involves the extensive use of computer applications, data (both "big" and "small"), and quantitative methods to help drive business decisions. Students will learn essential theories, concepts, methodologies, and use leading computer tools to perform analysis on real world data. Prerequisites: MATH 045 and MATH 037 both with a grade of "C" or better, BUSI 100, Junior standing.

BUSI 109. Management and Organizational Behavior. 4 Units.

This course provides students with 1) a broad understanding of the factors that affect human behavior in organizations and 2) a set of tools managers can use to influence the attitudes and behaviors of employees at the individual, group, and organizational levels. Junior standing required.

BUSI 110. Career and Development Seminar. 1 Unit.

This course is designed to enable business students to clearly define their career objectives and available opportunities. Through the course business students understand the connection between internships and full-time careers, are trained in the methods of conducting a successful job search and prepare for on-going career development. Topics include career assessment, resumes and related correspondence, interviewing, career planning, and job search resources. The course also discusses opportunities available in graduate studies. Junior standing.

BUSI 111. Accounting Information Systems. 4 Units.

The course emphasizes the use of accounting software and the interaction of accountants with information systems. It also covers assessment of internal and computer controls in order to identify key risks within accounting cycles, and it reviews the latest computer architectures used in ERP. Prerequisites: BUSI 033 and BUSI 100. Junior standing.

BUSI 113A. Intermediate Accounting I. 4 Units.

Students study the income measurement and asset valuation under generally accepted accounting principles. The course emphasizes current procedures, form and content of financial statements and critical evaluation of alternative accounting practices. Prerequisite: BUSI 031 with a "C" or better. Junior standing.

BUSI 113B. Intermediate Accounting II. 4 Units.

Students continue to study generally accepted accounting principles. Topics include owners' equity, dilutive securities, pensions, leases, income taxes, statement of cash flows and inflation accounting. Prerequisite: BUSI 113A with a "C" or better. Junior standing.

BUSI 113C. Advanced Accounting. 4 Units.

Students study advanced accounting theory and practice that includes accounting for inter-corporate investments, partnerships, foreign currency transactions, government and nonprofit organizations and current topics. Prerequisite: BUSI 113B with a "C" or better. Junior standing.

BUSI 115. Tax Accounting. 4 Units.

This course emphasizes federal tax laws, regulations and legal doctrines that significantly affect businesses, property transactions, and individuals. Tax planning techniques and tax research skills are emphasized. Prerequisites: BUSI 031 and BUSI 033 both with a "C" or better. Junior standing.

BUSI 117. Cost Accounting. 4 Units.

This course emphasizes skills used by management accountants or other decision makers within an organization for planning and control. Topics include analysis of cost structures, profit planning, product cost systems, cost estimation, budgeting, and the behavioral implications of management accounting systems. Prerequisites: BUSI 031, BUSI 033, and MATH 037 with a "C" or better. Junior standing.

BUSI 119. Auditing. 4 Units.

This capstone course in accounting studies the integration of financial and management accounting systems. Topics include the attest function and ethics, generally accepted auditing standards, systems of internal control, evidence and audit reports. Prerequisite: BUSI 113A with a "C" or better. Junior standing.

BUSI 121. Financial Markets. 4 Units.

Students examine the monetary transmission mechanism with emphasis on its implications for financial management of the individual firm. Topics include the institutions of money and credit creation, the flow-of-funds accounts and financial market subsection interconnection. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 122. Student Investment Fund (SIF). 4 Units.

Operated entirely by students, this course allows students to gain hands-on, real world experience in managing an investment fund with substantial market value. Students perform sector analyses as well as financial analyses of a wide array of securities. As a group they determine the fund's sector allocation and stock/bond/cash allocation. SIF, while maintaining a well-diversified profile, strives to outperform the market (S&P 500). Prerequisites: BUSI 105 with a "C" or better and permission of instructor. Junior standing. May be taken twice for credit.

BUSI 123. Investment Analysis. 4 Units.

Students examine the nature of securities markets and the characteristics of various types of securities for institutional and personal investment. Sources of investment information, security valuation and investment planning are introduced. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 124. Entrepreneurial Finance. 4 Units.

Entrepreneurial Finance discusses the financial issues facing a business start-up and those of a growing enterprise. Specific attention is paid to the acquisition of financing for new ventures, financial management of new and growing businesses, and the harvest of the entrepreneurial venture. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 125. Intermediate Financial Management. 4 Units.

This is a second course in business finance with emphasis on problem solving. Selected problems in the management of long-term and short-term assets are examined in depth and techniques for optimizing the goals of the firm are developed. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 126. Topics in Finance. 4 Units.

This course is an in-depth examination of special topics of current interest in the field of finance. Students and faculty together explore empirical and theoretical issues in such areas of finance as investment analysis, financial management, financial markets and other related areas. Prerequisites: BUSI 105 with a "C" or better and BUSI 121. Junior standing.

BUSI 127. Sport Economics and Finance. 4 Units.

This course focuses on providing students with the tools to understand how financial decisions are made within the sport industry. It examines basic financial concepts and issues related to the sport industry, and provides an overview of ownership, taxation, financial analyses, analytics, salary structures, and economic impact studies within the sport industry.

BUSI 134. Conflict Management. 4 Units.

Conflict is inevitable in organizational, inter-organizational and international settings. This course deals with conflict in concept and in practice and is designed to provide insights into its causes and its productive and destructive consequences. It also focuses on providing tools for managing conflict productively, and particularly emphasizes negotiation. Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 137. Database Management Systems. 4 Units.

Students learn to develop database management systems to design and build business applications. The course teaches database design (normalization), queries (SQL), development of business applications that use forms and reports, and an introduction to database administration. Prerequisite: BUSI 100 with a "C" or better. Junior standing.

BUSI 138. Networking and Telecommunications Management. 4 Units.

Students examine design, implementation, and management of local area networks. Studies include design issues in wide area networks and telecommunications with emphasis on Internet connectivity in addition to network server setup and administration that includes Web site administration. Prerequisite: BUSI 100 with a "C" or better. Junior standing.

BUSI 139. Electronic Commerce Project. 4 Units.

Students design and build applications for electronic commerce. Students use databases and programming to build interactive Web sites and Apps. Prerequisite: BUSI 137 with a "C" or better. Junior standing.

BUSI 140. Business Systems Analysis. 4 Units.

Students study systems development life cycle, methods and tools for systems analysis and design, human factors, user interface, and systems integration issues. Prerequisite: BUSI 136. Junior standing.

BUSI 141. Marketing Research. 4 Units.

Students study the concepts and techniques useful in the solution of marketing problems and in the identification of marketing opportunities. This course emphasizes the design of information acquisition and the evaluation and interpretation of research findings. Prerequisites: BUSI 107 and MATH 037 with a "C" or better. Junior standing.

BUSI 142. Personal Selling and Sales Management. 4 Units.

Personal Selling and Sales Management examines the sales function from strategic competitive importance to the firm to required direct sales skills of individual salesperson. Major subject areas covered are: the sales process, recruitment and training, organization and focus, "territories", evaluation and compensation. Prerequisite: BUSI 107 with a "C" or better.

BUSI 143. Product Innovation. 4 Units.

Maintaining competitiveness in the contemporary marketplace requires that companies focus increasingly on the management of product and service innovation. This course addresses the innovation process-technology-based and otherwise-from the identification of new ideas through the development of innovations and eventual introduction of novel products to consumers. Topics include sources of innovation, identification and screening of product innovations, business planning for new products, technological forecasting, integrating innovation with business objectives and organizational models for fostering innovation. Prerequisites: BUSI 107 and BUSI 141 with a "C" or better. Junior standing.

BUSI 144. Sport Marketing and Promotions. 4 Units.

This course focuses on four aspects of sports marketing: 1) marketing of sport products, 2) using sport as a marketing tool, 3) sport organizations' use of public relations, and 4) the role of technology in sport marketing and public relations. Prerequisites: BUSI 107 with a "C" or better and sophomore standing.

BUSI 146. Advanced Business Analytics. 4 Units.

This course covers advanced techniques for predictive analytics related to business problems. Emphasis will be given to approaches appropriate for large data sets. Enterprise level software will be used to analyze large real-world data. Students will also learn to write computer programs to obtain data not readily available in package software. The prerequisite for this course is BUSI 108 with a "C" or better.

BUSI 147. Consumer Behavior. 4 Units.

Students study the bases for consumer behavior, which include relevant information from social psychology, sociology, and cultural anthropology. Topics include the application of analysis of consumers' behavior and attitudes to marketing management decisions. Management decision areas that are discussed include advertising, product development, marketing research and pricing. Prerequisite: BUSI 107 with a "C" or better. Junior standing.

BUSI 148. Promotions Management. 4 Units.

Students study the theory and practices used in the promotions component of the marketing mix. Students are exposed to a number of techniques employed by marketing departments, advertising firms and public relations professionals to advertise and promote products and services. Prerequisite: BUSI 107 with a "C" or better. Junior standing.

BUSI 149. Marketing Analytics. 4 Units.

Using case studies, data simulations, data analysis techniques and examples from both for-profit and non-profit organizations, students will learn how marketing analytics can be used to optimize all areas of marketing, including consumer behavior prediction, target market reach and expansion, advertising targeting and optimization, social media and new platforms, and consumers' mobile experience and outreach. Prerequisites: BUSI 107 and BUSI 108 both with a grade of "C" or better, Junior standing.

BUSI 150. Business Analytics Project. 4 Units.

The Business Analytics Project is the capstone course that allows students to apply various data processing and analysis techniques in marketing, management, finance, accounting, operations, and other business disciplines. Students will use real-world data to produce analytics reports that facilitate data-driven business decision making. The prerequisite for this course is COMP 61 & BUSI 146 with a "C" or better.

BUSI 151. Digital Marketing. 4 Units.

In this course, students will learn how digital marketing has revolutionized the interactions between firms and consumers. The course is designed to get students to think like a digital marketing professional, and to give them experience with industry#relevant hands# on assignments and exercises. Prerequisites: BUSI 107 Marketing Management with a grade of C or better; junior standing.

BUSI 153. Entertainment Law. 4 Units.

This course explores legal relationships between entertainment entities and individuals involved in music management, film production, publishing, distribution, and the internet business. The course will expand the students' understanding through leading judicial decisions that have had an impact on the entertainment industry. The subject matter includes; copyright, trademark, contracts, torts, first amendment, anti-trust, state statutory law, agency and international law. Prerequisite: BUSI 053 with a "C" or better. Junior standing.

BUSI 157. Commercial Law. 4 Units.

This course is an in-depth study of commercial transactions between entities and individuals in the business environment. The topics that are covered include contracts, commercial paper, sales, secured transactions, bankruptcy, personal property, securities regulation and other related topics over the semester. Case materials and problems are used extensively in the course. Prerequisite: BUSI 053 with a "C" or better. Junior standing. (PLAW)

BUSI 159. Employment Law. 4 Units.

This course examines major labor-management relations legislation and its interpretation and treatment by administrative agencies and the courts. Primary emphasis is on the National Labor Relations Act as amended, but attention is also given to law concerning public sector labor relations, employment discrimination and other related law. Prerequisite: BUSI 053 with a "C" or better. Junior standing. (PLAW)

BUSI 163. International Financial Management. 4 Units.

This course is an analysis of management problems that arise in an international financial environment. Specific consideration is given to financial risk (s), management and international financial markets. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 165. International Marketing. 4 Units.

Students examine the environment for marketing across borders. The course covers marketing practice, policies and strategies in the multinational setting. Students complete a global screening of countries and draw up a marketing plan and strategy for a given product. Prerequisite: BUSI 107 with a "C" or better. Junior standing. (ETHC)

BUSI 169. International Management. 4 Units.

Develops cross-cultural awareness through understanding of social, political, economical, and historical influences on managerial practice. Methods include lectures, readings, videos, role-plays, and reports (written and oral). Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 170. Human Resources Management. 4 Units.

This course introduces the P/HR management area with its core of activities that include job analysis, performance evaluation, employee acquisition, employee and management development, and compensation and benefits. The influences of the equal employment and civil rights laws, wage, and hour laws, labor law and labor unions in organizational operations are studied. Prerequisite, may be taken concurrently: BUSI 109 with a "C" or better. Junior standing. (DVSY)

BUSI 171. Coaching Strengths and Developing Leaders. 4 Units.

Coaching is a powerful approach to performance management that enhances employee engagement, helps achieve higher levels of productivity, and creates empowered cultures. By using coaching skills to lead people and manage performance, you can help individuals and employees generate better ideas, take action, and increase their self-accountability. Moreover, effective coaching motivates others to take responsibility for their growth and reach important goals. This course is designed to be highly experiential where students have the opportunity to learn the theoretical foundations underlying coaching, as well having both the experience being coached and coaching others. Prerequisites: BUSI 109.

BUSI 173. Entrepreneurial Management Practicum. 4 Units.

This course serves as the capstone in the Entrepreneurial Management concentration. Students will integrate what they've learned in the program and apply it to a major project under the guidance of the instructor. Project can include business plan development for the student's own idea or experiential consulting project for a company, nonprofit, or agency that involves some aspect of new business development. Prerequisites: BUSI 031, BUSI 090. Junior standing.

BUSI 174. Creating Effective Work Teams. 4 Units.

The purpose of the course is to provide students with an understanding of work team dynamics that enable them to develop skills to participate in and lead teams in the workplace. Because the focus is on teams, the course takes a "learning by doing" approach and involves numerous group activities designed to reinforce the material. Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 175. Leadership and Change. 4 Units.

Students examine the processes of deliberate organizational change as adaptations to both internal and external developments. The course covers criteria for effective change programs, strategic variables that affect change (e.g., power, communication, conflict), and technologies that produce change (e.g., consulting, training, research). Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 176. Managing Sport Enterprises. 4 Units.

The purpose of this class is to introduce students to management and leadership in the sport industry. The unique attributes and structures of sport organizations will be explained. The course then covers multiple frames of organizational analysis and applies these to sport settings. In addition, students learn managerial and leadership skills and develop a management philosophy suited to the sport industry. Prerequisites: BUSI 109 and junior standing.

BUSI 177. Sport Event and Facilities Management. 4 Units.

This course is a comprehensive investigation into the principles needed to design, implement, and manage all types of sport events and facilities. Planning, logistics, risk management, human resource management, and marketing of events and facilities are given special attention. Opportunities for the application of these principles are also provided. Prerequisite: Junior standing.

BUSI 178. International Commercial Law. 4 Units.

This course provides students with the opportunity to study the law that governs international contracts. The course reviews the legal environment of international business, international sales and commercial transactions, trade laws, and the regulation of the international market place. Ethical considerations in international contracting, commercial dispute resolutions, and import and export transactions are also examined. The emphasis of the course is on the recognition of legal problems and the discovery and application of appropriate principles of international and domestic law that may assist in resolving these problems. Prerequisite: BUSI 053 with a "C" or better. Junior standing.

BUSI 181. Strategic Management and Policy. 4 Units.

This course is an integrated analysis of the major functional areas of an enterprise, viewed primarily from the upper levels of management. The strategic management process provides the framework that formulates and implements objectives, policies and programs through which a company gains sustainable competencies and competitive advantage in the marketplace. Students participate in computer simulations, case analysis, and experimental exercises in order to develop skills in executive teamwork, to solve strategic problems and to present and defend recommendations. Prerequisites: BUSI 031, BUSI 033, BUSI 053, BUSI 100, BUSI 104, BUSI 105, BUSI 107, BUSI 108, BUSI 109.

BUSI 183. Administrative Internship. 1-8 Units.

The internship affords students the opportunity to combine administrative practice and classroom theory. Interns are placed with private, public or third sector agencies for a period of at least 40 hours per earned credit hour. In addition, the supervising instructor assigns academic work to complement the hands-on portion of the internship. Interested students contact the ESB Career Services Office or the office of the Associate Dean located in Weber Hall.

BUSI 186. Firm, Markets, and Environment: Theory and Application. 3 Units.

This course provides in-depth exposure to both the theory of the firm and a set of quantitative techniques that managers need to utilize in order to facilitate decision making and problem solving. The topics include demand theory and estimation, forecasting with econometric and time-series techniques, production and cost theory, theory of markets, capital budgeting, fiscal and monetary policy, and the global economic and financial environment. Prerequisites: ECON 053, ECON 055, and permission of the MBA Program Director. Senior standing.

BUSI 188. Data and Decisions. 3 Units.

This course introduces the fundamental concepts and techniques that analyze risk and formulate sound decisions in uncertain environments. The course examines statistical methods which interpret and analyze data that include sampling concepts, regression analysis, and hypothesis testing. Applications include investor management, portfolio analysis, quality control and inventory management, portfolio analysis, quality control and inventory management. This course emphasizes analytical techniques that are broadly applicable to business problems. Prerequisites: MATH 037, MATH 045 and permission of the MBA Program Director. Senior standing.

BUSI 191. Independent Study. 1-4 Units.

This course is primarily for advanced majors in business administration. An independent study proposal is submitted to and is approved by the student's faculty adviser, the instructor and the ESB Academic Standards Committee. Independent study is self-directed study by the student.

BUSI 200. Management Information Systems. 2 Units.

This course is an introduction to the concepts and skills needed to utilize information system resources in business management. The course examines tools for handling common business tasks at the personal, team, and enterprise levels. Business cases emphasize the management roles in evaluating information technology. Prerequisite: Admission to the MBA program.

BUSI 201. Financial and Managerial Accounting. 3 Units.

This is an intensive and managerially oriented course that focuses on the most salient aspects of financial and managerial accounting. The course includes modules on analysis and decision making using financial reports, cost identification and management, and identification and analysis of financial and managerial accounting issues. Prerequisite: Admission to the MBA program.

BUSI 205. Fundamentals of Finance. 3 Units.

The purpose of this course is to acquaint students with the basic concepts and analytical techniques applicable to identifying and solving financial management problems. The topics covered include financial markets and institutions, valuation of assets and associated problems in the valuation of the firm, the relationships between risk and return, capital budgeting and capital structure. Prerequisite: Admission to the MBA program.

BUSI 206. Data and Decisions. 2 Units.

This course reviews basic business statistics in a business context. It also introduces advanced techniques for quantitative business analysis. Students learn about methods for collecting and analyzing data to address business problems using commonly available computer software. In addition, students learn about reading and interpreting statistical reports from a decision makers' perspective. Prerequisite: Admission to the MBA program.

BUSI 207. Marketing Management. 2 Units.

This course is designed to explore the managerial aspects of the marketing function. Quantitative and qualitative analysis of the company, its customers and its competition, commonly used in solving marketing problems, are emphasized. The course is organized around the key marketing decision variables – target market selection, product, pricing and distribution and promotion as well as the various marketing processes of strategy formulation, organization and implementation.

Prerequisite: Admission to the MBA program.

BUSI 208. Managerial Economics. 2 Units.

This course is designed to provide graduate business students with a rigorous exposure to selected theory from intermediate microeconomics, game theory and statistics, which can be applied to make sound managerial decisions in today's global business environment. It is assumed that students have an existing background in micro- and macroeconomics, differential calculus and statistics. Topics covered in this course include (but are not limited to): demand theory, production and cost theory, estimation of production and cost functions, theory of markets (perfect competition, monopoly, oligopoly, and monopolistic competition), and decision making under risk and uncertainty. Although these topics are presented in a quantitative manner, real-world application is stressed throughout the course. Prerequisite: Admission to the MBA program.

BUSI 209. Organizational Behavior. 2 Units.

This course is designed to provide students with (1) a broad understanding of the factors that influence human behavior in organizations and (2) a set of tools managers can use to direct employee behavior. The course's emphasis is on how to apply knowledge of organizational behavior to current problems in the workplace.

Prerequisite: Admission to the MBA program.

BUSI 210. Business and Public Policy. 3 Units.

This course is about the public policy process and the role business plays in it. It examines national, regional and international policy issues of relevance to business and the larger society. It also involves an examination of the ethical dimensions of business decision-making. Prerequisite: Completion of Phase I of MBA Program or the permission of instructor and the MBA Director.

BUSI 211. Applied Business Principles. 17 Units.

This course is an applied and intensive overview of business administration and is completed in one semester. Topics include six academic modules covering information systems, data analysis and decision making, accounting, finance, marketing, and organizational behavior. The course is team taught by numerous faculty in the Eberhardt School of Business, each with their own area of specialization. This course may be waived upon completion with a "B" average or better in all of the following courses: BUSI 200, BUSI 201, BUSI 205, BUSI 206, BUSI 207, BUSI 208, and BUSI 209. Prerequisite: Admission to the MBA program.

BUSI 212. MBA Career Development Seminar. 1 Unit.

This course is designed to enable business students to clearly define their career objectives and available opportunities as it relates to the Pacific MBA. Through the course, MBA students are trained in the tactics and methods to conduct a successful job search and to prepare for multiple career transitions over the course of their entire business career. Prerequisite: Acceptance into the MBA Program.

BUSI 213. Ethics and Corporate Social Responsibility. 3 Units.

The purpose of this course is to analyze ethical dilemmas faced by individuals in the context of business decision making and identify the foundations upon which resolution might be possible, to contrast your own value system with those of others, and to understand the value systems behind your opinions, decisions, and actions. A second purpose is to improve students' abilities as managers to anticipate, analyze, respond to, and manage issues of social responsibility and ethics that are faced in careers. Students have an opportunity to consider challenges that arise across different business functions in both domestic and global markets. Sample topics may include compliance with a variety of laws, fair and unfair competition, responsibility to customers, shareholders, employees and the environment, insider trading, product safety and more. Prerequisite: BUSI 211 or 255 with a "B" or better, or admission to the MAcc or BSBA program. Graduate students from other non-business programs may enroll with permission of the Associate Dean in the Eberhardt School of Business.

BUSI 214. Negotiation. 2 Units.

The purpose of this course is to understand the theory and processes of negotiation as it is practiced in a variety of settings. This course is designed to be relevant to the broad spectrum of negotiations problems that are faced by managers and individuals. Thus, the content is relevant to students interested in marketing, entrepreneurship, consulting relationships, international management or mergers and acquisitions. In addition, the course emphasizes negotiations that occur in the daily life of the manager. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 215. Taxation of Business Entities. 3 Units.

The primary focus of this course is on the federal income tax laws and regulations related to the formation, operation, and dissolution of C-corporations, S-corporations, and partnerships. The laws and regulations related to distributions made by these entities to shareholders and partners are also included. A second focus is on the tax laws and regulations related to taxation of gifts made by individuals and estates left by individuals. Prerequisites: BUSI 115 or equivalent and admission to the Master of Accounting or the BS in Accounting/Master of Accounting.

BUSI 216. Professional Accounting Research. 3 Units.

This course has two objectives: The first objective is to develop critical thinking skills, and therefore problem solving and decision making skills, within the context of professional accounting. This objective is achieved through research and analysis of complex accounting situations and cases. The second objective is to enhance students' technical communication skills; skills that are necessary to achieve and maintain successful careers in the accounting profession. The two objectives are integrated throughout the course. Prerequisites: 0BUSI 113B, and BUSI 115 or equivalent courses and acceptance into the MAcc or the BSAcc/MAcc.

BUSI 217. Ethics for Professional Accountants. 3 Units.

Ethical reasoning, integrity, objectivity, independence, and core values are applied to professional issues in accounting via lectures, case analysis, and independent research. Prerequisites: BUSI 119 and PHIL 027, or equivalent courses and admission into the MAcc program or BSMA program.

BUSI 218. Advanced Financial Accounting Graduate Level. 3 Units.

This course provides a thorough study of accounting for business combinations and preparation of consolidated financial statements for a parent corporation and one or more subsidiaries. We also examine several other accounting topics including: state and local governments, colleges and universities, health care organizations, partnerships, segment reporting, foreign currency transactions, and the movement towards harmonization of accounting standards worldwide. Prerequisites: BUSI 113B or equivalent and admission to the MAcc or the BSBA.

BUSI 219. Graduate Auditing Seminar. 3 Units.

This course presents advanced problems in the application of auditing standards; internal control evaluations; applications of statistics; audits of EDP systems; and auditor's ethical, legal, and reporting obligations. This class includes the following topics: the history of auditing leading to SOX, accounting ethics, fraud, internal auditing and risk management, sampling and IT auditing. These topics represent the most critical elements for understanding the current state of auditing. Prerequisites: BUSI 119 or equivalent and admission to the MAcc or BSMA.

BUSI 220. Corporate Finance. 3 Units.

This advanced course in financial management introduces a set of analytical tools needed to make sound corporate decisions in such areas as capital budgeting, capital structure and dividend policy. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 221. Entrepreneurial Finance. 3 Units.

Students analyze in-depth the financial issues that face a business start-up. Specific attention is paid to the acquisition of financing for new ventures and the financial management of new and growing businesses. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 222. Student Investment Fund. 3 Units.

Student Investment Fund (SIF) is operated entirely by students, and it allows them to gain hands-on, real world experience in managing an investment fund with substantial market value. Students perform sector analyses as well as financial analyses of a wide array of securities, and as a group have to determine the fund's sector allocation and stock/bond/cash allocation. SIF, while maintaining a well-diversified portfolio, strives to outperform the market (S&P 500). Prerequisite: BUSI 211 or BUSI 255 with a "B" or better and permission of instructor.

BUSI 223. Investment Management. 3 Units.

This course teaches students a set of analytical tools necessary to evaluate the profitability of a vast array of financial assets such as stocks, bonds, options and financial futures. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 225. Investments/Portfolio Analysis. 3 Units.**BUSI 226. Financial Statement Analysis. 3 Units.**

This course familiarizes students with the types of financial statements and analysis processes used by bankers and analysts. This course also provides students with a basic understanding of the many issues bankers and analysts face in understanding a company through its financial statements. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better or permission of Associate Dean.

BUSI 227. Forensic Accounting and Fraud Investigation. 3 Units.

This course provides a solid foundation for building skills in forensic accounting techniques, including gathering, interpreting, and documenting evidence. This course examines the investigative techniques used by accountants to conduct forensic examinations as well as the common schemes and techniques used to commit fraud. The skills acquired will enable students to assist businesses in detecting, investigating, documenting, and preventing fraud. Prerequisites: BUSI 119 and admission to the Master of Accounting or the BS in Accounting/Master of Accounting.

BUSI 228. Supply Chain Financial Management. 3 Units.

This course takes an accounting and financial perspective towards the supply chain. Although it includes some elements common to operations courses the main focus in the effective analysis of cost in the supply chain. This course explores the two critical and interrelated elements of managing a successful and cost-effective supply chain operation. First, the course demonstrates the application of corporate finance to decisions faced by operations finance managers. Second, the course addresses a set of competencies that are critical if a firm is to consistently achieve its financial and operational targets. These competencies include putting the theory of performance management into practice in the day-to-day operation of real firms, and effectively integrating financial sustainability metrics into the firm's supply chain financial strategy. Prerequisites: BUSI 113B and admission to the Master of Accounting or the BS in Accounting/Master of Accounting.

BUSI 230. Ethics in the Investment Profession. 1 Unit.

This course presents the fundamental principles applicable to the investment profession and the key concepts of the CFA Institute Code of Ethics. It also addresses why ethics matter to the investment profession and the importance of making ethical decisions using an ethical decision-making framework. Prerequisites: Admission to Master of Finance program.

BUSI 231. Quantitative Methods in Finance. 3 Units.

Empirical investigation of properties of financial data, such as basic probability theory, matrix algebra, ordinary least squares, and maximum likelihood estimation. Provides the basis for portfolio optimization by focusing on the estimation and testing of financial factor models. Prerequisites: Admission to Master of Finance program.

BUSI 232. Economics for Finance. 3 Units.

This course describes how individuals and firms make financial decisions, and how those decisions might deviate from those predicted by traditional financial or economic theory. Students explore the existence of psychological biases in financial decision-making, and examine the impacts of these biases in financial markets and other financial settings. The course examines how the insights of behavioral finance complements the traditional finance paradigm. It will also introduce students to behavioral and experimental methodologies used in finance, economics and other disciplines. Prerequisites: Admission to Master of Finance program.

BUSI 233. Fixed Income Securities. 3 Units.

This course covers valuations of a wide range of fixed income securities and derivatives including zero coupon bonds, coupon bonds such as Treasury bonds and corporate bonds, forwards and options on fixed income securities, callable bonds, interest-rate swaps, floating-rate notes, mortgages, and mortgage-backed securities. The course also focuses on yield curve construction, duration and convexity, and formal term structure models. Prerequisites: BUSI 231 - Quantitative Methods in Finance & BUSI 232 - Economics for Finance.

BUSI 234. Derivative and Alternative Investment. 3 Units.

This course introduces basic concepts underlying derivatives and the general arbitrage framework, as well as valuation of forwards, futures, options, and swaps. In addition, students are expected to be aware of fee structures, due diligence, and issues in valuing alternative investments, such as hedge funds, private equity, real estate, and commodities.

Prerequisites: BUSI 231 - Quantitative Methods in Finance & BUSI 232 - Economics for Finance.

BUSI 241. Marketing Research. 3 Units.

Students study the concepts and techniques useful in the solution of marketing problems and in the identification of marketing opportunities. Emphasis is given to the design of information acquisition and to the evaluation and interpretation of research findings. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 245. Customer Relationship Management. 3 Units.

This course explores the process of understanding, creating and delivering value to targeted business markets and individual customers. It relies upon assessment of value in the marketplace, and it provides a means of gaining an equitable return on value delivered and enhancing a supplier firm's present and future profitability. It also provides students with the knowledge and skills necessary to perform consumer analyses that can be used to understand markets and to develop effective marketing strategies. Prerequisite: BUSI 211 with a "B" or better.

BUSI 246. Marketing of Services. 3 Units.

This class explores the theory and strategies that drive service consumption. Students are exposed to the unique characteristics of marketing services that include the importance of the physical environment to service encounter success, the creation of customer satisfaction, the delivery of service quality and value, and the development of strategies to overcome service failure. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 247. Consumer Behavior. 3 Units.

This interdisciplinary course discusses the customer as the focus of the marketing system. Knowledge about the customer behavior, obtained through the application of a series of analytic frameworks and tools, is presented as the basis for marketing decisions at both the strategic and tactical levels. Central focus of the course is the analysis of customer decision-making processes and an understanding of the customer activity cycle or consumption chain. Methods to build customer satisfaction and loyalty through relationship marketing are stressed. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 250. Health Finance: Health Insurance. 3 Units.

Students examine the theory and practice of health insurance in the United States. Students who complete this course understand the history and institutional framework of health insurance, understand how health insurance operates, and are able to assess the efficiency and equity of healthcare finance. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 251. International Healthcare Systems. 3 Units.

This course is an international overview of healthcare finance and delivery that familiarizes students with healthcare finance and delivery around the world. Students develop critical analytical skills to enable them to compare and contrast health systems, identify relative strengths and weaknesses, and assess the possibilities for structural reform of the U.S. healthcare system. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 252. Healthcare Law. 3 Units.

Students analyze and learn the application of statutes, regulations, case law and policies that affect the health care system in the U.S. Upon completion of this course students understand the roles of the legal, legislative and administrative systems in health care, are able to discuss critically important legal, ethical and policy issues in health care, and are able to recognize situations that may occur in health systems management that require consultation with legal counsel. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 254. Health Economics. 4 Units.

This course applies the tools of microeconomics to the study of health care. It provides an analysis of how decisions are made by health care providers, consumers, and third parties responsible for payment (e.g. health insurers). The course is built around the individual's demand for health care and the supply of services by doctors and hospitals. Topics covered include health insurance, managed care and industry competitions, the pharmaceutical industry, the role of the government as a provider of care, long-term care, international health comparisons, and cost-benefit analysis/cost-effectiveness analysis. Prerequisite: BUSI 211 with a "B" or better or concurrent with BUSI 255.

BUSI 255. Applied Business Principles. 14 Units.

This course is an applied and intensive overview of business administration and is completed in one semester. Topics include six academic modules covering information systems, data analysis and decision making, accounting, finance, marketing, and organizational behavior. The course is team taught by numerous faculty in the Eberhardt School of Business, each with their own area of specialization. This course may be waived upon completion with a "B" average or better in all of the following courses: BUSI 200, BUSI 201, BUSI 205, BUSI 206, BUSI 207, and BUSI 209. Prerequisite: Admission to the MBA program.

BUSI 263. International Finance. 3 Units.

This course provides students with a conceptual framework for analyzing key financial decisions faced by multinational corporations. The major focus of this class is on spot exchange markets, forward exchange markets, the balance of payments, exchange rate determinations, hedging strategies, financing alternatives, transfers of international payments, and international bonds and equities investment and diversification. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 265. Global Marketing Strategy. 3 Units.

This course develops students' decision-making skills in the complex and fast changing international marketplace. Emphasis is placed on the frameworks and techniques used to decide which countries offer potential markets for products, how and to what degree the components of the marketing mix must be customized to an international market, and which strategies are best suited to entering a country. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 268. Global Business Competition. 3 Units.

Today, all levels of business operations are becoming global. Business people must consider additional parameters when they enter the global sphere. The rules of the game such as laws, customs, theories, and business practices may be different. This course works on business problems and strategies within the global environment in which U.S. businesses compete. The key objective of this course is to analyze the operation of global firms, to analyze various types of entry strategies into foreign countries, impacts on host and home countries, and the powerful flexibility of global systems. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better or permission of instructor and the MBA Director.

BUSI 269. Comparative Management. 3 Units.**BUSI 270. Human Resource Management. 3 Units.**

This course explores research, theory, and practical applications to administrative problems in human resource management. The course provides students with an understanding and appreciation of: strategic HRM, HRM law, job analysis and design, employee recruitment, selection and placement, training and development, performance evaluation, compensation and benefits, labor relations and collective bargaining, safety and health, international HRM, HRM computer simulation, HR information/management systems and other HRM technological innovations.

BUSI 274. Managing Quality/Productivity. 3 Units.

The purpose of this course is to recognize the essence of an organization as its operations, or as its production and service delivery. Topics include the life cycle of operations and supply chain strategies for goods and services, the integration of and information flows between business functions, and the challenges of the globalization of operations and supply chain choices. Students apply analytical methods to develop, deliver, and improve production systems in a "real world" field experience. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 275. Technology and Innovation. 3 Units.

The process of taking science and technology to the marketplace has taken on strategic importance to company leadership in many industries. This course provides students with concepts, frameworks and tools for managing technology and innovation. How can companies identify the major developments in science and technology that affect them directly and indirectly? What avenues are available to maintain technological leadership, and how can they be integrated into a company's overall objectives? What global strategies are available to develop technology and take it to the marketplace? Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 276. Entrepreneurial Management. 3 Units.

This course is designed to integrate the functional knowledge students have acquired in their first semester as an MBA student and to teach them how to apply it within innovative and entrepreneurial business settings that call upon managers to make decisions and plans under conditions of uncertainty. The focus on the entrepreneur and entrepreneurial management reflects two considerations. The first is the growing recognition of the critical importance of entrepreneurial activities in capitalist economics. The second is that it introduces students to a set of opportunities that most of them encounter in their careers. New companies as well as innovative businesses at larger firms often look for businesspeople with the perspective and skills needed to thrive in innovative business environments and the aim is to help prepare students for such opportunities. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better. Graduate students from other programs may enroll with permission of the Associate Dean in the Eberhardt School.

BUSI 277. Management Skills. 3 Units.

Students examine and develop key managerial and leadership competencies needed to be successful in organizations. Emphasis will be placed on self-assessment and development of existing skills in working with others via teamwork, conflict resolution, and leadership. Prerequisite: Graduate Standing.

BUSI 278. International Entrepreneurship. 3 Units.

This course provides the entrepreneur with a broad view of the factors underlying cross-national and cross-cultural business success. The emphasis is on concepts, techniques and factual knowledge useful for a career in international and global business management and entrepreneurship. This course draws on the experiences of small as well as large entrepreneurial firms, in both the manufacturing and service sectors from all over the world in new firm creation and/or adaptation in difference countries and the global economy. Prerequisite: BUSI 211 or permission of instructor and Associate Dean for Graduate Studies.

BUSI 279. Leadership. 2 Units.

This course utilizes the research and practice of recent years that concerns situational leadership and transformational leadership. The class emphasis will be experiential. Emphasis is placed on the consensus building, values alignment and vision building. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 281. Strategic Management. 3 Units.

The vast majority of newly formulated business strategies fail in their implementation. In some cases they end up as faint, half-hearted replicas of the original plans. In other cases they simply never materialize at all. This course uses the case method in a multinational corporate setting to address the managerial challenge of strategy implementation by examining the organizational elements that must be drawn into line to support a strategy, and by examining the immense difficulties involved in changing an organization. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 283. Administrative Internship. 1-3 Units.**BUSI 291. Graduate Independent Study. 1-4 Units.****BUSI 293. Special Topics. 4 Units.**

Master of Finance

Programs Offered

Master of Finance (MSF)

Learning Goals, Objectives, and Outcomes

The goals of the Eberhardt School of Business graduate programs are to produce graduate students who possess business knowledge and skills, who are able to apply their knowledge and skills in a global business setting, who are able to work as part of a team, and who are able to communicate effectively. The specific objectives and outcomes for the Master of Finance and the Bachelor of Science in Finance/Master of Finance Dual Degree Program are:

1. Professional Competency.
 - a. demonstrate the ability to collect and quantitatively analyze financial data.
 - b. apply financial analysis techniques.
 - c. demonstrate the ability to make informed investment decisions and manage risk.
2. Ethics
 - a. demonstrate an understanding of the provisions of the CFA Institute's Code of Ethics and Standards of Professional Conduct.
 - b. recognize and resolve ethical issues in financial decision-making.
3. Communication
 - a. effectively communicate in ways appropriate to the audience and the subject matter.
 - b. effectively lead or cooperate with team members in conducting complex investment analyses.

Master of Finance

The Master of Finance is designed for students who wish to sit for the CFA Level I and Level II exams. The 31 units of coursework includes one unit of ethics, six units of accounting, 15 units of finance, six units of economics and quantitative methods, and three units of management skills. In particular, each student is required to take a three unit Student Investment Fund course in which students gain hands-on experience making investment decisions and operating a nearly \$4 million investment fund. Students with an undergraduate degree in finance, economics, math, or related areas complete the program in two semesters. Students who do not have such a background typically will spend an extra two semesters completing the coursework necessary for completing the program.

Graduate Admission Requirements

- Admission to the Eberhardt School of Business Master of Finance program is competitive and based on criteria which indicate a high promise of success. Performance in prior coursework and standardized test scores are strong considerations in the admission decision.
- A U.S. bachelor's degree or its international equivalent is required for admission. The Graduate Admissions Committee gives equal consideration to all undergraduate majors in the admissions process.
- Admission decisions are made on a rolling basis. Applicants are notified immediately when decisions have been made.
- The completed application packet must be submitted before the Admissions Committee can render a final decision. The required materials include:
 - The completed application form and supporting materials.
 - Transcripts from all undergraduate, graduate and professional schools attended.
 - Two letters of recommendation written by people knowledgeable of the applicant's qualifications for graduate work.

Graduate Program Prerequisites

For applicants from the University of the Pacific, the admission requirements are:

- BUSI 105 with a grade of "B" or better.
- BUSI 31, BUSI 33, ECON 53, ECON 55, MATH 45, and MATH 37, or their equivalents, a minimum "B" average across all of the courses.

For applicants from outside of the University of the Pacific, students are required to have competitive performance in fundamental financial management course, as well as in courses of economics, accounting, and math.

Master of Finance

Requires 31 Units

BUSI 218	Advanced Financial Accounting Graduate Level	3
BUSI 220	Corporate Finance	3
BUSI 222	Student Investment Fund	3
BUSI 225	Investments/Portfolio Analysis	3
BUSI 226	Financial Statement Analysis	3
BUSI 230	Ethics in the Investment Profession	1
BUSI 231	Quantitative Methods in Finance	3
BUSI 232	Economics for Finance	3
BUSI 233	Fixed Income Securities	3

BUSI 234	Derivative and Alternative Investment	3
BUSI 277	Management Skills	3

Business Administration Courses

BUSI 100. Management Information Systems. 4 Units.

This course is an introduction to the concepts and skills needed to utilize information systems resources. The course focuses on the role of information systems in management function with an emphasis on end-user computing, that includes the role of users in information system planning and design. Topics include information systems technology, applications and development. Students gain experience with spreadsheet, data base and network applications. Prerequisite: COMP 025 or COMP 051.

BUSI 104. Operations Management. 4 Units.

Students analyze the production and operations systems in the organization and application of quantitative methods in solution of production and operations problems. A major emphasis is on managerial and economic implications. Prerequisites: MATH 037 and MATH 045, both with a "C" or better, BUSI 031, BUSI 033, ECON 053, and ECON 055, and an acceptable computer course. Junior standing.

BUSI 105. Financial Management. 4 Units.

This course introduces financial instruments and institutions from the perspective of the financial management of the firm. Tools of financial analysis and planning as well as principles of short-term and long-term financing are developed as they relate to profit-ability and liquidity. Prerequisites: MATH 037 and MATH 045 both with a "C" or better, BUSI 031, ECON 053, and ECON 055. Junior standing.

BUSI 106. Sport Analytics. 4 Units.

Analytics is the discovery, interpretation, and communication of meaningful patterns in data. Sports Analytics refers to the use of data and quantitative methods to measure performance and make decisions to gain advantage in the competitive sports arena. Teams in basketball, football, ice hockey and soccer have followed baseball's lead and developed analytics departments to support a myriad of decision-making on and off the field. This course explores recent trends in sport analytics from a practical point of view. Students will learn the skills and ideas to create analytics of potential value to sport organizations. The course content will cover topics such as data management, statistic data analysis, modeling, and decision making in various sport settings. Prerequisites: BUSI 108 and junior standing.

BUSI 107. Marketing Management. 4 Units.

BUSI 107 is an introduction to the institutions, techniques, policies and procedures utilized in the planning and performance of the activities which direct the flow of goods and services from producers to consumers. An emphasis is placed on the managerial process of decision-making in the setting of marketing strategy. Prerequisite: ECON 053. Sophomore standing.

BUSI 108. Introduction to Business Analytics. 4 Units.

This course is designed as an introduction to the field of business data analytics. Analytics involves the extensive use of computer applications, data (both "big" and "small"), and quantitative methods to help drive business decisions. Students will learn essential theories, concepts, methodologies, and use leading computer tools to preform analysis on real world data. Prerequisites: MATH 045 and MATH 037 both with a grade of "C" or better, BUSI 100, Junior standing.

BUSI 109. Management and Organizational Behavior. 4 Units.

This course provides students with 1) a broad understanding of the factors that affect human behavior in organizations and 2) a set of tools managers can use to influence the attitudes and behaviors of employees at the individual, group, and organizational levels. Junior standing required.

BUSI 110. Career and Development Seminar. 1 Unit.

This course is designed to enable business students to clearly define their career objectives and available opportunities. Through the course business students understand the connection between internships and full-time careers, are trained in the methods of conducting a successful job search and prepare for on-going career development. Topics include career assessment, resumes and related correspondence, interviewing, career planning, and job search resources. The course also discusses opportunities available in graduate studies. Junior standing.

BUSI 111. Accounting Information Systems. 4 Units.

The course emphasizes the use of accounting software and the interaction of accountants with information systems. It also covers assessment of internal and computer controls in order to identify key risks within accounting cycles, and it reviews the latest computer architectures used in ERP. Prerequisites: BUSI 033 and BUSI 100. Junior standing.

BUSI 113A. Intermediate Accounting I. 4 Units.

Students study the income measurement and asset valuation under generally accepted accounting principles. The course emphasizes current procedures, form and content of financial statements and critical evaluation of alternative accounting practices. Prerequisite: BUSI 031 with a "C" or better. Junior standing.

BUSI 113B. Intermediate Accounting II. 4 Units.

Students continue to study generally accepted accounting principles. Topics include owners' equity, dilutive securities, pensions, leases, income taxes, statement of cash flows and inflation accounting. Prerequisite: BUSI 113A with a "C" or better. Junior standing.

BUSI 113C. Advanced Accounting. 4 Units.

Students study advanced accounting theory and practice that includes accounting for inter-corporate investments, partnerships, foreign currency transactions, government and nonprofit organizations and current topics. Prerequisite: BUSI 113B with a "C" or better. Junior standing.

BUSI 115. Tax Accounting. 4 Units.

This course emphasizes federal tax laws, regulations and legal doctrines that significantly affect businesses, property transactions, and individuals. Tax planning techniques and tax research skills are emphasized. Prerequisites: BUSI 031 and BUSI 033 both with a "C" or better. Junior standing.

BUSI 117. Cost Accounting. 4 Units.

This course emphasizes skills used by management accountants or other decision makers within an organization for planning and control. Topics include analysis of cost structures, profit planning, product cost systems, cost estimation, budgeting, and the behavioral implications of management accounting systems. Prerequisites: BUSI 031, BUSI 033, and MATH 037 with a "C" or better. Junior standing.

BUSI 119. Auditing. 4 Units.

This capstone course in accounting studies the integration of financial and management accounting systems. Topics include the attest function and ethics, generally accepted auditing standards, systems of internal control, evidence and audit reports. Prerequisite: BUSI 113A with a "C" or better. Junior standing.

BUSI 121. Financial Markets. 4 Units.

Students examine the monetary transmission mechanism with emphasis on its implications for financial management of the individual firm. Topics include the institutions of money and credit creation, the flow-of-funds accounts and financial market subsection interconnection. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 122. Student Investment Fund (SIF). 4 Units.

Operated entirely by students, this course allows students to gain hands-on, real world experience in managing an investment fund with substantial market value. Students perform sector analyses as well as financial analyses of a wide array of securities. As a group they determine the fund's sector allocation and stock/bond/cash allocation. SIF, while maintaining a well-diversified profile, strives to outperform the market (S&P 500). Prerequisites: BUSI 105 with a "C" or better and permission of instructor. Junior standing. May be taken twice for credit.

BUSI 123. Investment Analysis. 4 Units.

Students examine the nature of securities markets and the characteristics of various types of securities for institutional and personal investment. Sources of investment information, security valuation and investment planning are introduced. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 124. Entrepreneurial Finance. 4 Units.

Entrepreneurial Finance discusses the financial issues facing a business start-up and those of a growing enterprise. Specific attention is paid to the acquisition of financing for new ventures, financial management of new and growing businesses, and the harvest of the entrepreneurial venture. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 125. Intermediate Financial Management. 4 Units.

This is a second course in business finance with emphasis on problem solving. Selected problems in the management of long-term and short-term assets are examined in depth and techniques for optimizing the goals of the firm are developed. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 126. Topics in Finance. 4 Units.

This course is an in-depth examination of special topics of current interest in the field of finance. Students and faculty together explore empirical and theoretical issues in such areas of finance as investment analysis, financial management, financial markets and other related areas. Prerequisites: BUSI 105 with a "C" or better and BUSI 121. Junior standing.

BUSI 127. Sport Economics and Finance. 4 Units.

This course focuses on providing students with the tools to understand how financial decisions are made within the sport industry. It examines basic financial concepts and issues related to the sport industry, and provides an overview of ownership, taxation, financial analyses, analytics, salary structures, and economic impact studies within the sport industry.

BUSI 134. Conflict Management. 4 Units.

Conflict is inevitable in organizational, inter-organizational and international settings. This course deals with conflict in concept and in practice and is designed to provide insights into its causes and its productive and destructive consequences. It also focuses on providing tools for managing conflict productively, and particularly emphasizes negotiation. Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 137. Database Management Systems. 4 Units.

Students learn to develop database management systems to design and build business applications. The course teaches database design (normalization), queries (SQL), development of business applications that use forms and reports, and an introduction to database administration. Prerequisite: BUSI 100 with a "C" or better. Junior standing.

BUSI 138. Networking and Telecommunications Management. 4 Units.

Students examine design, implementation, and management of local area networks. Studies include design issues in wide area networks and telecommunications with emphasis on Internet connectivity in addition to network server setup and administration that includes Web site administration. Prerequisite: BUSI 100 with a "C" or better. Junior standing.

BUSI 139. Electronic Commerce Project. 4 Units.

Students design and build applications for electronic commerce. Students use databases and programming to build interactive Web sites and Apps. Prerequisite: BUSI 137 with a "C" or better. Junior standing.

BUSI 140. Business Systems Analysis. 4 Units.

Students study systems development life cycle, methods and tools for systems analysis and design, human factors, user interface, and systems integration issues. Prerequisite: BUSI 136. Junior standing.

BUSI 141. Marketing Research. 4 Units.

Students study the concepts and techniques useful in the solution of marketing problems and in the identification of marketing opportunities. This course emphasizes the design of information acquisition and the evaluation and interpretation of research findings. Prerequisites: BUSI 107 and MATH 037 with a "C" or better. Junior standing.

BUSI 142. Personal Selling and Sales Management. 4 Units.

Personal Selling and Sales Management examines the sales function from strategic competitive importance to the firm to required direct sales skills of individual salesperson. Major subject areas covered are: the sales process, recruitment and training, organization and focus, "territories", evaluation and compensation. Prerequisite: BUSI 107 with a "C" or better.

BUSI 143. Product Innovation. 4 Units.

Maintaining competitiveness in the contemporary marketplace requires that companies focus increasingly on the management of product and service innovation. This course addresses the innovation process-technology-based and otherwise-from the identification of new ideas through the development of innovations and eventual introduction of novel products to consumers. Topics include sources of innovation, identification and screening of product innovations, business planning for new products, technological forecasting, integrating innovation with business objectives and organizational models for fostering innovation. Prerequisites: BUSI 107 and BUSI 141 with a "C" or better. Junior standing.

BUSI 144. Sport Marketing and Promotions. 4 Units.

This course focuses on four aspects of sports marketing: 1) marketing of sport products, 2) using sport as a marketing tool, 3) sport organizations' use of public relations, and 4) the role of technology in sport marketing and public relations. Prerequisites: BUSI 107 with a "C" or better and sophomore standing.

BUSI 146. Advanced Business Analytics. 4 Units.

This course covers advanced techniques for predictive analytics related to business problems. Emphasis will be given to approaches appropriate for large data sets. Enterprise level software will be used to analyze large real-world data. Students will also learn to write computer programs to obtain data not readily available in package software. The prerequisite for this course is BUSI 108 with a "C" or better.

BUSI 147. Consumer Behavior. 4 Units.

Students study the bases for consumer behavior, which include relevant information from social psychology, sociology, and cultural anthropology. Topics include the application of analysis of consumers' behavior and attitudes to marketing management decisions. Management decision areas that are discussed include advertising, product development, marketing research and pricing. Prerequisite: BUSI 107 with a "C" or better. Junior standing.

BUSI 148. Promotions Management. 4 Units.

Students study the theory and practices used in the promotions component of the marketing mix. Students are exposed to a number of techniques employed by marketing departments, advertising firms and public relations professionals to advertise and promote products and or services. Prerequisite: BUSI 107 with a "C" or better. Junior standing.

BUSI 149. Marketing Analytics. 4 Units.

Using case studies, data simulations, data analysis techniques and examples from both for-profit and non-profit organizations, students will learn how marketing analytics can be used to optimize all areas of marketing, including consumer behavior prediction, target market reach and expansion, advertising targeting and optimization, social media and new platforms, and consumers' mobile experience and outreach. Prerequisites: BUSI 107 and BUSI 108 both with a grade of "C" or better, Junior standing.

BUSI 150. Business Analytics Project. 4 Units.

The Business Analytics Project is the capstone course that allows students to apply various data processing and analysis techniques in marketing, management, finance, accounting, operations, and other business disciplines. Students will use real-world data to produce analytics reports that facilitate data-driven business decision making. The prerequisite for this course is COMP 61 & BUSI 146 with a "C" or better.

BUSI 151. Digital Marketing. 4 Units.

In this course, students will learn how digital marketing has revolutionized the interactions between firms and consumers. The course is designed to get students to think like a digital marketing professional, and to give them experience with industry#relevant hands# on assignments and exercises. Prerequisites: BUSI 107 Marketing Management with a grade of C or better; junior standing.

BUSI 153. Entertainment Law. 4 Units.

This course explores legal relationships between entertainment entities and individuals involved in music management, film production, publishing, distribution, and the internet business. The course will expand the students' understanding through leading judicial decisions that have had an impact on the entertainment industry. The subject matter includes; copyright, trademark, contracts, torts, first amendment, anti-trust, state statutory law, agency and international law. Prerequisite: BUSI 053 with a "C" or better. Junior standing.

BUSI 157. Commercial Law. 4 Units.

This course is an in-depth study of commercial transactions between entities and individuals in the business environment. The topics that are covered include contracts, commercial paper, sales, secured transactions, bankruptcy, personal property, securities regulation and other related topics over the semester. Case materials and problems are used extensively in the course. Prerequisite: BUSI 053 with a "C" or better. Junior standing. (PLAW)

BUSI 159. Employment Law. 4 Units.

This course examines major labor-management relations legislation and its interpretation and treatment by administrative agencies and the courts. Primary emphasis is on the National Labor Relations Act as amended, but attention is also given to law concerning public sector labor relations, employment discrimination and other related law. Prerequisite: BUSI 053 with a "C" or better. Junior standing. (PLAW)

BUSI 163. International Financial Management. 4 Units.

This course is an analysis of management problems that arise in an international financial environment. Specific consideration is given to financial risk (s), management and international financial markets. Prerequisite: BUSI 105 with a "C" or better. Junior standing.

BUSI 165. International Marketing. 4 Units.

Students examine the environment for marketing across borders. The course covers marketing practice, policies and strategies in the multinational setting. Students complete a global screening of countries and draw up a marketing plan and strategy for a given product. Prerequisite: BUSI 107 with a "C" or better. Junior standing. (ETHC)

BUSI 169. International Management. 4 Units.

Develops cross-cultural awareness through understanding of social, political, economical, and historical influences on managerial practice. Methods include lectures, readings, videos, role-plays, and reports (written and oral). Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 170. Human Resources Management. 4 Units.

This course introduces the P/HR management area with its core of activities that include job analysis, performance evaluation, employee acquisition, employee and management development, and compensation and benefits. The influences of the equal employment and civil rights laws, wage, and hour laws, labor law and labor unions in organizational operations are studied. Prerequisite, may be taken concurrently: BUSI 109 with a "C" or better. Junior standing. (DVSY)

BUSI 171. Coaching Strengths and Developing Leaders. 4 Units.

Coaching is a powerful approach to performance management that enhances employee engagement, helps achieve higher levels of productivity, and creates empowered cultures. By using coaching skills to lead people and manage performance, you can help individuals and employees generate better ideas, take action, and increase their self-accountability. Moreover, effective coaching motivates others to take responsibility for their growth and reach important goals. This course is designed to be highly experiential where students have the opportunity to learn the theoretical foundations underlying coaching, as well having both the experience being coached and coaching others. Prerequisites: BUSI 109.

BUSI 173. Entrepreneurial Management Practicum. 4 Units.

This course serves as the capstone in the Entrepreneurial Management concentration. Students will integrate what they've learned in the program and apply it to a major project under the guidance of the instructor. Project can include business plan development for the student's own idea or experiential consulting project for a company, nonprofit, or agency that involves some aspect of new business development. Prerequisites: BUSI 031, BUSI 090. Junior standing.

BUSI 174. Creating Effective Work Teams. 4 Units.

The purpose of the course is to provide students with an understanding of work team dynamics that enable them to develop skills to participate in and lead teams in the workplace. Because the focus is on teams, the course takes a "learning by doing" approach and involves numerous group activities designed to reinforce the material. Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 175. Leadership and Change. 4 Units.

Students examine the processes of deliberate organizational change as adaptations to both internal and external developments. The course covers criteria for effective change programs, strategic variables that affect change (e.g., power, communication, conflict), and technologies that produce change (e.g., consulting, training, research). Prerequisite: BUSI 109 with a "C" or better. Junior standing.

BUSI 176. Managing Sport Enterprises. 4 Units.

The purpose of this class is to introduce students to management and leadership in the sport industry. The unique attributes and structures of sport organizations will be explained. The course then covers multiple frames of organizational analysis and applies these to sport settings. In addition, students learn managerial and leadership skills and develop a management philosophy suited to the sport industry. Prerequisites: BUSI 109 and junior standing.

BUSI 177. Sport Event and Facilities Management. 4 Units.

This course is a comprehensive investigation into the principles needed to design, implement, and manage all types of sport events and facilities. Planning, logistics, risk management, human resource management, and marketing of events and facilities are given special attention. Opportunities for the application of these principles are also provided. Prerequisite: Junior standing.

BUSI 178. International Commercial Law. 4 Units.

This course provides students with the opportunity to study the law that governs international contracts. The course reviews the legal environment of international business, international sales and commercial transactions, trade laws, and the regulation of the international market place. Ethical considerations in international contracting, commercial dispute resolutions, and import and export transactions are also examined. The emphasis of the course is on the recognition of legal problems and the discovery and application of appropriate principles of international and domestic law that may assist in resolving these problems. Prerequisite: BUSI 053 with a "C" or better. Junior standing.

BUSI 181. Strategic Management and Policy. 4 Units.

This course is an integrated analysis of the major functional areas of an enterprise, viewed primarily from the upper levels of management. The strategic management process provides the framework that formulates and implements objectives, policies and programs through which a company gains sustainable competencies and competitive advantage in the marketplace. Students participate in computer simulations, case analysis, and experimental exercises in order to develop skills in executive teamwork, to solve strategic problems and to present and defend recommendations. Prerequisites: BUSI 031, BUSI 033, BUSI 053, BUSI 100, BUSI 104, BUSI 105, BUSI 107, BUSI 108, BUSI 109.

BUSI 183. Administrative Internship. 1-8 Units.

The internship affords students the opportunity to combine administrative practice and classroom theory. Interns are placed with private, public or third sector agencies for a period of at least 40 hours per earned credit hour. In addition, the supervising instructor assigns academic work to complement the hands-on portion of the internship. Interested students contact the ESB Career Services Office or the office of the Associate Dean located in Weber Hall.

BUSI 186. Firm, Markets, and Environment: Theory and Application. 3 Units.

This course provides in-depth exposure to both the theory of the firm and a set of quantitative techniques that managers need to utilize in order to facilitate decision making and problem solving. The topics include demand theory and estimation, forecasting with econometric and time-series techniques, production and cost theory, theory of markets, capital budgeting, fiscal and monetary policy, and the global economic and financial environment. Prerequisites: ECON 053, ECON 055, and permission of the MBA Program Director. Senior standing.

BUSI 188. Data and Decisions. 3 Units.

This course introduces the fundamental concepts and techniques that analyze risk and formulate sound decisions in uncertain environments. The course examines statistical methods which interpret and analyze data that include sampling concepts, regression analysis, and hypothesis testing. Applications include investor management, portfolio analysis, quality control and inventory management. This course emphasizes analytical techniques that are broadly applicable to business problems. Prerequisites: MATH 037, MATH 045 and permission of the MBA Program Director. Senior standing.

BUSI 191. Independent Study. 1-4 Units.

This course is primarily for advanced majors in business administration. An independent study proposal is submitted to and is approved by the student's faculty adviser, the instructor and the ESB Academic Standards Committee. Independent study is self-directed study by the student.

BUSI 200. Management Information Systems. 2 Units.

This course is an introduction to the concepts and skills needed to utilize information system resources in business management. The course examines tools for handling common business tasks at the personal, team, and enterprise levels. Business cases emphasize the management roles in evaluating information technology. Prerequisite: Admission to the MBA program.

BUSI 201. Financial and Managerial Accounting. 3 Units.

This is an intensive and managerially oriented course that focuses on the most salient aspects of financial and managerial accounting. The course includes modules on analysis and decision making using financial reports, cost identification and management, and identification and analysis of financial and managerial accounting issues. Prerequisite: Admission to the MBA program.

BUSI 205. Fundamentals of Finance. 3 Units.

The purpose of this course is to acquaint students with the basic concepts and analytical techniques applicable to identifying and solving financial management problems. The topics covered include financial markets and institutions, valuation of assets and associated problems in the valuation of the firm, the relationships between risk and return, capital budgeting and capital structure. Prerequisite: Admission to the MBA program.

BUSI 206. Data and Decisions. 2 Units.

This course reviews basic business statistics in a business context. It also introduces advanced techniques for quantitative business analysis. Students learn about methods for collecting and analyzing data to address business problems using commonly available computer software. In addition, students learn about reading and interpreting statistical reports from a decision makers' perspective. Prerequisite: Admission to the MBA program.

BUSI 207. Marketing Management. 2 Units.

This course is designed to explore the managerial aspects of the marketing function. Quantitative and qualitative analysis of the company, its customers and its competition, commonly used in solving marketing problems, are emphasized. The course is organized around the key marketing decision variables – target market selection, product, pricing and distribution and promotion as well as the various marketing processes of strategy formulation, organization and implementation. Prerequisite: Admission to the MBA program.

BUSI 208. Managerial Economics. 2 Units.

This course is designed to provide graduate business students with a rigorous exposure to selected theory from intermediate microeconomics, game theory and statistics, which can be applied to make sound managerial decisions in today's global business environment. It is assumed that students have an existing background in micro- and macroeconomics, differential calculus and statistics. Topics covered in this course include (but are not limited to): demand theory, production and cost theory, estimation of production and cost functions, theory of markets (perfect competition, monopoly, oligopoly, and monopolistic competition), and decision making under risk and uncertainty. Although these topics are presented in a quantitative manner, real-world application is stressed throughout the course. Prerequisite: Admission to the MBA program.

BUSI 209. Organizational Behavior. 2 Units.

This course is designed to provide students with (1) a broad understanding of the factors that influence human behavior in organizations and (2) a set of tools managers can use to direct employee behavior. The course's emphasis is on how to apply knowledge of organizational behavior to current problems in the workplace. Prerequisite: Admission to the MBA program.

BUSI 210. Business and Public Policy. 3 Units.

This course is about the public policy process and the role business plays in it. It examines national, regional and international policy issues of relevance to business and the larger society. It also involves an examination of the ethical dimensions of business decision-making. Prerequisite: Completion of Phase I of MBA Program or the permission of instructor and the MBA Director.

BUSI 211. Applied Business Principles. 17 Units.

This course is an applied and intensive overview of business administration and is completed in one semester. Topics include six academic modules covering information systems, data analysis and decision making, accounting, finance, marketing, and organizational behavior. The course is team taught by numerous faculty in the Eberhardt School of Business, each with their own area of specialization. This course may be waived upon completion with a "B" average or better in all of the following courses: BUSI 200, BUSI 201, BUSI 205, BUSI 206, BUSI 207, BUSI 208, and BUSI 209. Prerequisite: Admission to the MBA program.

BUSI 212. MBA Career Development Seminar. 1 Unit.

This course is designed to enable business students to clearly define their career objectives and available opportunities as it relates to the Pacific MBA. Through the course, MBA students are trained in the tactics and methods to conduct a successful job search and to prepare for multiple career transitions over the course of their entire business career. Prerequisite: Acceptance into the MBA Program.

BUSI 213. Ethics and Corporate Social Responsibility. 3 Units.

The purpose of this course is to analyze ethical dilemmas faced by individuals in the context of business decision making and identify the foundations upon which resolution might be possible, to contrast your own value system with those of others, and to understand the value systems behind your opinions, decisions, and actions. A second purpose is to improve students' abilities as managers to anticipate, analyze, respond to, and manage issues of social responsibility and ethics that are faced in careers. Students have an opportunity to consider challenges that arise across different business functions in both domestic and global markets. Sample topics may include compliance with a variety of laws, fair and unfair competition, responsibility to customers, shareholders, employees and the environment, insider trading, product safety and more. Prerequisite: BUSI 211 or 255 with a "B" or better, or admission to the MAcc or BSBA program. Graduate students from other non-business programs may enroll with permission of the Associate Dean in the Eberhardt School of Business.

BUSI 214. Negotiation. 2 Units.

The purpose of this course is to understand the theory and processes of negotiation as it is practiced in a variety of settings. This course is designed to be relevant to the broad spectrum of negotiations problems that are faced by managers and individuals. Thus, the content is relevant to students interested in marketing, entrepreneurship, consulting relationships, international management or mergers and acquisitions. In addition, the course emphasizes negotiations that occur in the daily life of the manager. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 215. Taxation of Business Entities. 3 Units.

The primary focus of this course is on the federal income tax laws and regulations related to the formation, operation, and dissolution of C-corporations, S-corporations, and partnerships. The laws and regulations related to distributions made by these entities to shareholders and partners are also included. A second focus is on the tax laws and regulations related to taxation of gifts made by individuals and estates left by individuals. Prerequisites: BUSI 115 or equivalent and admission to the Master of Accounting or the BS in Accounting/Master of Accounting.

BUSI 216. Professional Accounting Research. 3 Units.

This course has two objectives: The first objective is to develop critical thinking skills, and therefore problem solving and decision making skills, within the context of professional accounting. This objective is achieved through research and analysis of complex accounting situations and cases. The second objective is to enhance students' technical communication skills; skills that are necessary to achieve and maintain successful careers in the accounting profession. The two objectives are integrated throughout the course. Prerequisites: 0BUSI 113B, and BUSI 115 or equivalent courses and acceptance into the MAcc or the BSACC/MAcc.

BUSI 217. Ethics for Professional Accountants. 3 Units.

Ethical reasoning, integrity, objectivity, independence, and core values are applied to professional issues in accounting via lectures, case analysis, and independent research. Prerequisites: BUSI 119 and PHIL 027, or equivalent courses and admission into the MAcc program or BSMA program.

BUSI 218. Advanced Financial Accounting Graduate Level. 3 Units.

This course provides a thorough study of accounting for business combinations and preparation of consolidated financial statements for a parent corporation and one or more subsidiaries. We also examine several other accounting topics including: state and local governments, colleges and universities, health care organizations, partnerships, segment reporting, foreign currency transactions, and the movement towards harmonization of accounting standards worldwide. Prerequisites: BUSI 113B or equivalent and admission to the MAcc or the BSBA.

BUSI 219. Graduate Auditing Seminar. 3 Units.

This course presents advanced problems in the application of auditing standards; internal control evaluations; applications of statistics; audits of EDP systems; and auditor's ethical, legal, and reporting obligations. This class includes the following topics: the history of auditing leading to SOX, accounting ethics, fraud, internal auditing and risk management, sampling and IT auditing. These topics represent the most critical elements for understanding the current state of auditing. Prerequisites: BUSI 119 or equivalent and admission to the MAcc or BSMA.

BUSI 220. Corporate Finance. 3 Units.

This advanced course in financial management introduces a set of analytical tools needed to make sound corporate decisions in such areas as capital budgeting, capital structure and dividend policy. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 221. Entrepreneurial Finance. 3 Units.

Students analyze in-depth the financial issues that face a business start-up. Specific attention is paid to the acquisition of financing for new ventures and the financial management of new and growing businesses. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 222. Student Investment Fund. 3 Units.

Student Investment Fund (SIF) is operated entirely by students, and it allows them to gain hands-on, real world experience in managing an investment fund with substantial market value. Students perform sector analyses as well as financial analyses of a wide array of securities, and as a group have to determine the fund's sector allocation and stock/bond/cash allocation. SIF, while maintaining a well-diversified portfolio, strives to outperform the market (S&P 500). Prerequisite: BUSI 211 or BUSI 255 with a "B" or better and permission of instructor.

BUSI 223. Investment Management. 3 Units.

This course teaches students a set of analytical tools necessary to evaluate the profitability of a vast array of financial assets such as stocks, bonds, options and financial futures. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 225. Investments/Portfolio Analysis. 3 Units.**BUSI 226. Financial Statement Analysis. 3 Units.**

This course familiarizes students with the types of financial statements and analysis processes used by bankers and analysts. This course also provides students with a basic understanding of the many issues bankers and analysts face in understanding a company through its financial statements. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better or permission of Associate Dean.

BUSI 227. Forensic Accounting and Fraud Investigation. 3 Units.

This course provides a solid foundation for building skills in forensic accounting techniques, including gathering, interpreting, and documenting evidence. This course examines the investigative techniques used by accountants to conduct forensic examinations as well as the common schemes and techniques used to commit fraud. The skills acquired will enable students to assist businesses in detecting, investigating, documenting, and preventing fraud. Prerequisites: BUSI 119 and admission to the Master of Accounting or the BS in Accounting/Master of Accounting.

BUSI 228. Supply Chain Financial Management. 3 Units.

This course takes an accounting and financial perspective towards the supply chain. Although it includes some elements common to operations courses the main focus in the effective analysis of cost in the supply chain. This course explores the two critical and interrelated elements of managing a successful and cost-effective supply chain operation. First, the course demonstrates the application of corporate finance to decisions faced by operations finance managers. Second, the course addresses a set of competencies that are critical if a firm is to consistently achieve its financial and operational targets. These competencies include putting the theory of performance management into practice in the day-to-day operation of real firms, and effectively integrating financial sustainability metrics into the firm's supply chain financial strategy. Prerequisites: BUSI 113B and admission to the Master of Accounting or the BS in Accounting/Master of Accounting.

BUSI 230. Ethics in the Investment Profession. 1 Unit.

This course presents the fundamental principles applicable to the investment profession and the key concepts of the CFA Institute Code of Ethics. It also addresses why ethics matter to the investment profession and the importance of making ethical decisions using an ethical decision-making framework. Prerequisites: Admission to Master of Finance program.

BUSI 231. Quantitative Methods in Finance. 3 Units.

Empirical investigation of properties of financial data, such as basic probability theory, matrix algebra, ordinary least squares, and maximum likelihood estimation. Provides the basis for portfolio optimization by focusing on the estimation and testing of financial factor models. Prerequisites: Admission to Master of Finance program.

BUSI 232. Economics for Finance. 3 Units.

This course describes how individuals and firms make financial decisions, and how those decisions might deviate from those predicted by traditional financial or economic theory. Students explore the existence of psychological biases in financial decision-making, and examine the impacts of these biases in financial markets and other financial settings. The course examines how the insights of behavioral finance complements the traditional finance paradigm. It will also introduce students to behavioral and experimental methodologies used in finance, economics and other disciplines. Prerequisites: Admission to Master of Finance program.

BUSI 233. Fixed Income Securities. 3 Units.

This course covers valuations of a wide range of fixed income securities and derivatives including zero coupon bonds, coupon bonds such as Treasury bonds and corporate bonds, forwards and options on fixed income securities, callable bonds, interest-rate swaps, floating-rate notes, mortgages, and mortgage-backed securities. The course also focuses on yield curve construction, duration and convexity, and formal term structure models. Prerequisites: BUSI 231 - Quantitative Methods in Finance & BUSI 232 - Economics for Finance.

BUSI 234. Derivative and Alternative Investment. 3 Units.

This course introduces basic concepts underlying derivatives and the general arbitrage framework, as well as valuation of forwards, futures, options, and swaps. In addition, students are expected to be aware of fee structures, due diligence, and issues in valuing alternative investments, such as hedge funds, private equity, real estate, and commodities. Prerequisites: BUSI 231 - Quantitative Methods in Finance & BUSI 232 - Economics for Finance.

BUSI 241. Marketing Research. 3 Units.

Students study the concepts and techniques useful in the solution of marketing problems and in the identification of marketing opportunities. Emphasis is given to the design of information acquisition and to the evaluation and interpretation of research findings. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 245. Customer Relationship Management. 3 Units.

This course explores the process of understanding, creating and delivering value to targeted business markets and individual customers. It relies upon assessment of value in the marketplace, and it provides a means of gaining an equitable return on value delivered and enhancing a supplier firm's present and future profitability. It also provides students with the knowledge and skills necessary to perform consumer analyses that can be used to understand markets and to develop effective marketing strategies. Prerequisite: BUSI 211 with a "B" or better.

BUSI 246. Marketing of Services. 3 Units.

This class explores the theory and strategies that drive service consumption. Students are exposed to the unique characteristics of marketing services that include the importance of the physical environment to service encounter success, the creation of customer satisfaction, the delivery of service quality and value, and the development of strategies to overcome service failure. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 247. Consumer Behavior. 3 Units.

This interdisciplinary course discusses the customer as the focus of the marketing system. Knowledge about the customer behavior, obtained through the application of a series of analytic frameworks and tools, is presented as the basis for marketing decisions at both the strategic and tactical levels. Central focus of the course is the analysis of customer decision-making processes and an understanding of the customer activity cycle or consumption chain. Methods to build customer satisfaction and loyalty through relationship marketing are stressed. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 250. Health Finance: Health Insurance. 3 Units.

Students examine the theory and practice of health insurance in the United States. Students who complete this course understand the history and institutional framework of health insurance, understand how health insurance operates, and are able to assess the efficiency and equity of healthcare finance. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 251. International Healthcare Systems. 3 Units.

This course is an international overview of healthcare finance and delivery that familiarizes students with healthcare finance and delivery around the world. Students develop critical analytical skills to enable them to compare and contrast health systems, identify relative strengths and weaknesses, and assess the possibilities for structural reform of the U.S. healthcare system. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 252. Healthcare Law. 3 Units.

Students analyze and learn the application of statutes, regulations, case law and policies that affect the health care system in the U.S. Upon completion of this course students understand the roles of the legal, legislative and administrative systems in health care, are able to discuss critically important legal, ethical and policy issues in health care, and are able to recognize situations that may occur in health systems management that require consultation with legal counsel. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 254. Health Economics. 4 Units.

This course applies the tools of microeconomics to the study of health care. It provides an analysis of how decisions are made by health care providers, consumers, and third parties responsible for payment (e.g. health insurers). The course is built around the individual's demand for health care and the supply of services by doctors and hospitals. Topics covered include health insurance, managed care and industry competitions, the pharmaceutical industry, the role of the government as a provider of care, long-term care, international health comparisons, and cost-benefit analysis/cost-effectiveness analysis. Prerequisite: BUSI 211 with a "B" or better or concurrent with BUSI 255.

BUSI 255. Applied Business Principles. 14 Units.

This course is an applied and intensive overview of business administration and is completed in one semester. Topics include six academic modules covering information systems, data analysis and decision making, accounting, finance, marketing, and organizational behavior. The course is team taught by numerous faculty in the Eberhardt School of Business, each with their own area of specialization. This course may be waived upon completion with a "B" average or better in all of the following courses: BUSI 200, BUSI 201, BUSI 205, BUSI 206, BUSI 207, and BUSI 209. Prerequisite: Admission to the MBA program.

BUSI 263. International Finance. 3 Units.

This course provides students with a conceptual framework for analyzing key financial decisions faced by multinational corporations. The major focus of this class is on spot exchange markets, forward exchange markets, the balance of payments, exchange rate determinations, hedging strategies, financing alternatives, transfers of international payments, and international bonds and equities investment and diversification. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 265. Global Marketing Strategy. 3 Units.

This course develops students' decision-making skills in the complex and fast changing international marketplace. Emphasis is placed on the frameworks and techniques used to decide which countries offer potential markets for products, how and to what degree the components of the marketing mix must be customized to an international market, and which strategies are best suited to entering a country. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 268. Global Business Competition. 3 Units.

Today, all levels of business operations are becoming global. Business people must consider additional parameters when they enter the global sphere. The rules of the game such as laws, customs, theories, and business practices may be different. This course works on business problems and strategies within the global environment in which U.S. businesses compete. The key objective of this course is to analyze the operation of global firms, to analyze various types of entry strategies into foreign countries, impacts on host and home countries, and the powerful flexibility of global systems. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better or permission of instructor and the MBA Director.

BUSI 269. Comparative Management. 3 Units.**BUSI 270. Human Resource Management. 3 Units.**

This course explores research, theory, and practical applications to administrative problems in human resource management. The course provides students with an understanding and appreciation of: strategic HRM, HRM law, job analysis and design, employee recruitment, selection and placement, training and development, performance evaluation, compensation and benefits, labor relations and collective bargaining, safety and health, international HRM, HRM computer simulation, HR information/management systems and other HRM technological innovations.

BUSI 274. Managing Quality/Productivity. 3 Units.

The purpose of this course is to recognize the essence of an organization as its operations, or as its production and service delivery. Topics include the life cycle of operations and supply chain strategies for goods and services, the integration of and information flows between business functions, and the challenges of the globalization of operations and supply chain choices. Students apply analytical methods to develop, deliver, and improve production systems in a "real world" field experience. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 275. Technology and Innovation. 3 Units.

The process of taking science and technology to the marketplace has taken on strategic importance to company leadership in many industries. This course provides students with concepts, frameworks and tools for managing technology and innovation. How can companies identify the major developments in science and technology that affect them directly and indirectly? What avenues are available to maintain technological leadership, and how can they be integrated into a company's overall objectives? What global strategies are available to develop technology and take it to the marketplace? Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 276. Entrepreneurial Management. 3 Units.

This course is designed to integrate the functional knowledge students have acquired in their first semester as an MBA student and to teach them how to apply it within innovative and entrepreneurial business settings that call upon managers to make decisions and plans under conditions of uncertainty. The focus on the entrepreneur and entrepreneurial management reflects two considerations. The first is the growing recognition of the critical importance of entrepreneurial activities in capitalist economics. The second is that it introduces students to a set of opportunities that most of them encounter in their careers. New companies as well as innovative businesses at larger firms often look for businesspeople with the perspective and skills needed to thrive in innovative business environments and the aim is to help prepare students for such opportunities. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better. Graduate students from other programs may enroll with permission of the Associate Dean in the Eberhardt School.

BUSI 277. Management Skills. 3 Units.

Students examine and develop key managerial and leadership competencies needed to be successful in organizations. Emphasis will be placed on self-assessment and development of existing skills in working with others via teamwork, conflict resolution, and leadership. Prerequisite: Graduate Standing.

BUSI 278. International Entrepreneurship. 3 Units.

This course provides the entrepreneur with a broad view of the factors underlying cross-national and cross-cultural business success. The emphasis is on concepts, techniques and factual knowledge useful for a career in international and global business management and entrepreneurship. This course draws on the experiences of small as well as large entrepreneurial firms, in both the manufacturing and service sectors from all over the world in new firm creation and/or adaptation in difference countries and the global economy. Prerequisite: BUSI 211 or permission of instructor and Associate Dean for Graduate Studies.

BUSI 279. Leadership. 2 Units.

This course utilizes the research and practice of recent years that concerns situational leadership and transformational leadership. The class emphasis will be experiential. Emphasis is placed on the consensus building, values alignment and vision building. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 281. Strategic Management. 3 Units.

The vast majority of newly formulated business strategies fail in their implementation. In some cases they end up as faint, half-hearted replicas of the original plans. In other cases they simply never materialize at all. This course uses the case method in a multinational corporate setting to address the managerial challenge of strategy implementation by examining the organizational elements that must be drawn into line to support a strategy, and by examining the immense difficulties involved in changing an organization. Prerequisite: BUSI 211 or BUSI 255 with a "B" or better.

BUSI 283. Administrative Internship. 1-3 Units.

BUSI 291. Graduate Independent Study. 1-4 Units.

BUSI 293. Special Topics. 4 Units.

Master of Science in Business Analytics

Program Offered

Master of Science in Business Analytics (MSBA)

Mission

The Eberhardt School of Business develops knowledgeable, innovative business leaders in a personalized, experience-based learning environment and produces scholarship that contributes to disciplinary knowledge, informs teaching, and advances the practice of business.

We share a set of underlying principles that govern our behaviors and our ability to achieve our mission. These include:

- Maintaining a student-centered learning environment;
- Educating the whole person;
- Stimulating intellectual growth;
- Maintaining a mutually supportive community of faculty, staff and students;
- Engaging external stakeholders;
- Promoting excellence;
- Being socially responsible;
- Behaving ethically and with integrity;
- Providing service to the university, community and profession.
- Degree programs offered by the Eberhardt School of Business are designed to fulfill this mission and to provide the educational breadth and depth tomorrow's leaders will need.

Learning Goals, Objectives, and Outcomes

The goals of the Eberhardt School of Business graduate programs are to produce graduate students who possess business knowledge and skills, who are able to apply their knowledge and skills in a global business setting, who are able to work as part of a team, and who are able to communicate effectively.

The specific objectives and outcomes for the Master of Science in Business Analytics Graduates of the MS in Business Analytics program will be able to

1. Demonstrate technical proficiency in mathematics, statistics, programming, and software tools for business analytics
2. Effectively communicate in oral and written forms at a high-level of professional expectations
3. Translate and analyze data into presentable and actionable business/managerial solutions with an awareness of ethical issues in the field

Master of Science in Business Analytics

The Master of Science in Business Analytics is designed for students and professionals with backgrounds in business and non-business fields seeking to advance their career opportunities in analytics, business intelligence and big data. The 31-unit, 12-month program is taught using a HyFlex modality and the curriculum includes coursework in concepts and applications, database management with SQL and R, applied analytics, Python, and leading the analytics organization. Students are required to complete Internship in the field as well as complete a two-course Capstone Project sequence.

Graduate Admission Requirements

Admission to the Eberhardt School of Business Master of Science in Business Analytics is competitive and based on criteria which indicate a high promise of success. Performance in prior coursework and, any relevant work experience, are indications of future success.

Academic Preparation:

- Applicants must hold a bachelor's degree or its equivalent from an accredited college or university as indicated in an official transcript.
- Applicants will typically have a GPA of 3.0 or higher on a 4.0 scale
- Applicants should have demonstrated quantitative capabilities.

Professional Experience:

- There is no minimum work experience required for admission.

International Students:

- See the Graduate School Admissions criteria for International Students

Master of Science in Business Analytics

MSBA 210	Business Analytics	3
MSBA 220	Business Concepts and Applications of Analytics	3
MSBA 230	Database Management Systems with SQL and R	3
MSBA 232	Programming for Data Science	1
MSBA 235	Research Methods and Ethics	3
MSBA 240	Advanced Business Analytics	3
MSBA 250	Applied Business Analytics	3
or MSBA 251	Marketing Analytics	
MSBA 260	Leading the Analytics Organization	3

MSBA 265	Special Analytics Topics	3
MSBA 285	Capstone Project I	3
MSBA 286	Capstone Project II	3
Internship Course		

MS Business Analytics Courses

MSBA 210. Business Analytics. 3 Units.

Analytics involves the extensive use of computer applications, data of various sizes, and quantitative methods to inform managerial decisions. Students will learn essential theories, concepts, methodologies, and use leading computer tools including data visualization to perform analysis and interpretation on real world data.

MSBA 220. Business Concepts and Applications of Analytics. 3 Units.

This course reviews key concepts in the major business disciplines such as accounting, finance, management, operations, marketing, and how analytics can be applied in these disciplines.

MSBA 230. Database Management Systems with SQL and R. 3 Units.

This course provides a comprehensive introduction to database modelling and design. In this course the language of relational databases: Structured Query Language (SQL) will be covered comprehensively. This course will also explore the origins of NoSQL databases and the characteristics that distinguishes them from traditional relational database management systems.

MSBA 232. Programming for Data Science. 1 Unit.

In this course, students will learn the fundamentals of a data-oriented programming language such as Python. The learning objectives will be achieved by performing multiple small assignments designed for beginners of programming and system development.

MSBA 235. Research Methods and Ethics. 3 Units.

In this course, students will learn the entire typical research process, including formulation of intent and design, methodology, statistical techniques, management of data, legal and organizational issues, and ethical considerations.

MSBA 240. Advanced Business Analytics. 3 Units.

This course covers advanced business analytics techniques. Topics include data preparation, predictive analysis, association, visualization, and others. Enterprise level software will be used to analyze large real-world data.

MSBA 250. Applied Business Analytics. 3 Units.

This course provides students an opportunity to apply analytics in various business disciplines, such as marketing, finance, accounting, management, operations, and others.

MSBA 251. Marketing Analytics. 3 Units.

This course will serve as an introduction to marketing analytics. Students will study various tools for generating marketing insights from empirical data in areas such as segmentation, targeting and positioning, satisfaction management, customer lifetime analysis, customer choice, and product and price decisions using conjoint analysis. This is an experiential learning course where students will define and refine KPIs, analyze business requirements, select appropriate analytics platforms, and use data to solve real-world business problems. Students will learn how analytics can be used to optimize all areas of marketing including consumer behavior prediction, advertising targeting and optimization, social media, mobile and digital platforms/applications.

MSBA 260. Leading the Analytics Organization. 3 Units.

Every successful organization needs a strategy to connect its mission, vision and goals to employees, customers, and other entities. Big data offers new and exciting ways to learn more about short term and long-term firm level decisions, customer wants and needs, employee attraction and retention, and sound, evidence based decision making. In this course, you will learn tools and frameworks for data-driven decision making and how to lead your organization with the information available to you.

MSBA 265. Special Analytics Topics. 3 Units.

This class will familiarize students with a broad cross-section of models and algorithms for machine learning. In this course students will be able to make sense of data using data cleaning and various visualization techniques, as well as data mining algorithms, on real world data that is both interesting and relevant. Students will also learn the fundamentals of NLP and will be able to perform different text processing models on document and social media text.

MSBA 285. Capstone Project I. 3 Units.

In the Capstone Project course, each student will complete a comprehensive business analytics project on a selected industry or business discipline, such as agriculture, wine, healthcare, environmental, social media, marketing, HR, finance, accounting, etc. The course is divided into two parts. The main tasks in Part 1 include project topic selection, problem identification, project planning and design, and data collection.

MSBA 286. Capstone Project II. 3 Units.

In the Capstone Project course, each student will complete a comprehensive business analytics project on a selected industry or business discipline, such as agriculture, wine, healthcare, environmental, social media, marketing, HR, finance, accounting, etc. The course is divided into two parts. The main tasks in Part 2 include data analysis, project revision, report writing, report publication, and project presentation.

School of Engineering and Computer Science

<http://www.pacific.edu/eng>

Phone: (209) 946-2151

Location: John T. Chambers Technology Center
Elizabeth Orwin, Dean

Programs Offered

Master of Science in Data Science

Master of Science in Engineering Science

Master of Science in Computer Science

MSES Concentrations

Civil Engineering (Environmental, Structural)

Computer Engineering / Electrical Engineering / Computer Science

Engineering Management

Mechanical Engineering

Mission

The mission of the School of Engineering and Computer Science is to provide a superior, student-centered learning environment that emphasizes close faculty-student interaction, experiential education, and distinctive research opportunities. Graduates will be prepared to excel as professionals, pursue advanced degrees, and possess the technical knowledge, critical thinking skills, creativity, and ethical values needed to

lead the development and application of technology for bettering society and sustaining the world environment.

Admission Criteria for Master of Science in Engineering Science

All applicants for the Master of Science in Engineering Science program must submit the following materials to the Research and Graduate Studies Office at the University of the Pacific. A completed application includes:

1. The Graduate School application form
2. Letters of recommendation
3. Transcripts from the institution where the BS in engineering, computer science, or relevant degree was granted
4. A personal statement on professional goals and objectives
5. A 3.0/4.0 GPA on the last 60 units of undergraduate study
6. For students whose first language is not English, Test of English as a Foreign Language (TOEFL) is required. The minimum score for admission is 550 (paper) or 213 (computer) and the minimum score for a teaching assistantship award is 575 (paper) or 231 (computer)

Academic Policies for Master of Science in Engineering Science

Engineering and Computer Science Prerequisite Requirement

All course prerequisites in the MS in Engineering Science program must be passed with a grade of C or higher.

Courses Taken Pass/No Credit

All courses that count toward the MS in Engineering Science must be taken for a letter grade (except for thesis units).

Graduate Independent Studies

Students who have an interest in a subject not offered as a regular course and who, by their overall performance at Pacific, have proven their ability to do independent work, may consider enrolling in a graduate independent study. The qualified student should initiate discussions with his/her advisor and with a professor who is knowledgeable in the subject. If both parties are in agreement, the student must complete the Individualized Study Form and submit it to the instructor and Office of the Registrar prior to the last day to add (see University Academic Calendar). Students on academic probation are not permitted to enroll in independent study courses in any department of the University. The following School of Engineering and Computer Science policies apply:

1. The course(s) may not be substituted for a regularly scheduled course unless approved by the department.
2. If the course is to be used as an elective, approval by the student's advisor and the department chairperson is required.
3. All courses must be taken for a letter grade; the pass/no credit option is not allowed for independent study courses.
4. Each course may be taken for one (1), two (2), three (3), or four (4) units. The unit value for the course is established between the student and the professor responsible for the course. The student's advisor should be informed of this decision.

Course Substitutions

A maximum of six units of approved advanced undergraduate courses (100 level) can count toward the MS in Engineering Science.

Admission Criteria for Master of Science in Data Science

All applicants for the Master of Science in Data Science program must submit the following materials via the GradCAS online application system. A completed application includes:

1. Online application via the GradCAS system (<https://gradcas.liaisoncas.org/apply/>)
2. Two letters of recommendation
3. Official transcripts. An official, course-by-course evaluation of any non-US transcripts with an overall U.S. GPA equivalent from one of the agencies accepted by the University (see full list here (<https://www.pacific.edu/admission/graduate-programs/international-applicants.html>))
4. A 2.65/4.0 GPA on the last 60 units of undergraduate study
5. For students whose first language is not English, Test of English as a Foreign Language (TOEFL) is required. The minimum score for admission is 550 (paper) or 213 (computer) and the minimum score for a teaching assistantship award is 575 (paper) or 231 (computer). Alternatively, we accept IELTS
6. A personal statement of interest. The statement of interest allows applicants to demonstrate their motivation, skills, and abilities that will contribute to their academic success in our program. While there is no specific format required for this statement, applicants are advised to give particular consideration to:
 - Academic credentials
 - Experience in the foundational concepts of:
 - Statistics
 - Linear Algebra
 - Computer programming (any language, but Python and R are preferred)
 - Commitment and personal stamina to undertake fast paced, intensive academic program
 - Enthusiasm for this particular course of study

Academic Policies for Master of Science in Data Science

Engineering and Computer Science Prerequisite Requirement

All course prerequisites in the MS in Data Science program must be passed with a grade of C or higher.

Courses Taken Pass/No Credit

All courses that count toward the MS in Data Science must be taken for a letter grade, with the exception of ANLT 283, which may be taken on a Pass / No Credit basis.

Engineering Science

Degrees Offered

Master of Science in Engineering Science

Concentrations

Civil Engineering (Environmental, Structural)

Computer Engineering / Electrical Engineering / Computer Science
Engineering Management

Mechanical Engineering

The Master of Science in Engineering Science (MSES) is designed to strengthen students' technical, analytical, and professional breadth and depth. Students learn techniques and best practices of professional research, develop habits of independent thinking, and establish the intellectual foundations for achieving excellence in the engineering sciences.

The goals of the MSES graduate program in the School of Engineering and Computer Science are:

1. Enable students to learn advanced scientific and engineering approaches within a specialized field.
2. Require students to grow intellectually and develop skills needed for independent thinking and problem solving.
3. Provide opportunities for students to engage in intellectual inquiry and demonstrate intellectual achievement.

Admission Criteria

Prospective students with earned bachelor's degrees must submit the following materials to the Research and Graduate Studies Office at the University of the Pacific. A completed application includes:

1. The Graduate School application form.
2. Three letters of reference.
3. Transcripts from the institution where the BS in engineering or computer science (or relevant degree) was granted.
4. A personal statement on professional goals and objectives.
5. Official scores on the GRE General Examination.
6. A 3.0/4.0 GPA overall in the undergraduate program or in the last 60 units of undergraduate study. Applicants with a GPA of 2.65 or higher, but less than 3.0, will be considered on an individual basis.
7. For students whose first language is not English, Test of English as a Foreign Language (TOEFL or IELTS) is required. The minimum score for admission is 80 for TOEFL iBT and 6.5 for IELTS. The minimum score for teaching assistants is 90 for TOEFL iBT or 7.0 for IELTS.

Accelerated Five Year Blended Program

The accelerated five year Blended Program provides an excellent opportunity for students to begin their graduate work while they complete their undergraduate degree requirements. Students can pursue the accelerated Blended Program that allows them to complete their bachelors and masters degree in as little as five years. This five year period includes some summer sessions and/or advanced placement units that were earned prior to starting at Pacific.

Students would begin by enrolling in an undergraduate program in the Pacific SOECS. Following acceptance into the Blended Program during their junior or senior years, students may begin taking graduate level courses to blend the bachelors and masters degrees together. The two degrees are awarded on the same date.

Thesis and Non-thesis Options

The MSES program has two degree options: thesis and non-thesis plans, each requiring a minimum number of 30 units. The thesis plan requires students to perform independent research and culminates in the completion of a thesis based on the findings of the research. The thesis plan is intended for students who plan to pursue a career in research or plan to pursue a PhD. The non-thesis option allows students to complete a project, or complete all their units through coursework.

Blended Program Admission Criteria

School of Engineering and Computer Science undergraduates who maintain a minimum institutional GPA of 3.0 and a major GPA of 3.0 upon reaching junior or senior status may be considered for admission to the Blended Program. Once admitted they may begin taking graduate level courses. Students who choose to withdraw from the program prior to completing all the requirements may be awarded the Bachelor of Science degree alone, contingent upon having completed all of the respective program requirements, which includes the co-op experience.

Student Learning Outcomes

1. **Employ problem-solving, design, and research skills necessary to operate in the interdisciplinary arena of engineering and computer science.**
2. **Demonstrate expertise in at least one of the engineering science concentrations represented in the MSES program.**
3. **Engage in intellectual inquiry and address new challenges in engineering and computer science.**

Master of Science in Engineering Science Curriculum

All students who receive an MSES complete a set of core courses that cover the broader subjects of research and analysis. Students choose from one of four concentrations: Civil Engineering, Mechanical Engineering, Engineering Management, or Computer Engineering/Electrical Engineering/Computer Science. Students must complete a minimum of 30 units with a Pacific cumulative grade point average of 3.0 in order to earn the Master of Science in Engineering Science.

A. Thesis Option

1. Students must complete a minimum of 30 units.
2. All students must perform independent research that must culminate in the completion of a thesis based on the findings of the research. For successful completion of the thesis course, students must submit a research proposal, conduct the research, write the thesis, and successfully complete a final oral defense.
3. All students complete six units of ENGR 299, Thesis Research.
4. The Concentration Requirements specified must be satisfied.

B. Non-thesis Option

1. Students must complete a minimum of 30 units.
2. For the Non-thesis Option, students may choose to do a project or they may satisfy all the unit requirements through coursework.
 - a. For the *project* option, students complete up to 6 units of research under the supervision of an SOECS faculty member. Upon completion of the project, the student submits a comprehensive report.
 - b. Students may elect to satisfy the entire degree through *coursework*.
 - c. Both project and coursework options must satisfy the Concentration Requirements specified.

Master of Science in Engineering Science with a concentration in Civil Engineering

Within the Civil Engineering concentration, students can focus on the areas of environmental or structural engineering. Students must complete a minimum of 30 units with a Pacific cumulative grade point

average of 3.0 in order to earn the Master of Science in engineering science degree.

Core Courses

ENGR 201	Techniques in Research	3
Select one of the following Math or Computational Science Elective:		3
ENGR 219	Numerical Methods for Engineering	
ENGR 250	Probability and Statistics for Engineering and Computer Science	
Breadth Elective (one from approved list for concentration)		3-4
Select one of the following options:		6
A) Thesis Option		
ENGR 299	Thesis	
B) Project Option		
ENGR 291	Graduate Independent Study	
ENGR 297	Graduate Research	
C) Course Work Option (Non-Thesis)		
Courses Approved by Advisor as Coherent Plan, including at least one 200 level CIVL course		
Concentration Requirements		
Four 200 level CIVL courses Approved by Advisor as Coherent Plan		12
Additional Elective		3

Master of Science in Engineering Science with a concentration in Computer Engineering/Electrical Engineering/Computer Science

Students must complete a minimum of 30 units with a Pacific cumulative grade point average of 3.0 in order to earn the Master of Science in Engineering Science degree. Six of the 30 units may be upper division undergraduate courses approved by the advisor. A single course cannot fulfill requirements in both the MSES and BS degree.

Core Courses

ENGR 201	Techniques in Research	3
Select one of the following Math or Computational Science Elective:		3
ENGR 219	Numerical Methods for Engineering	
ENGR 250	Probability and Statistics for Engineering and Computer Science	
Breadth Elective (one from approved list for concentration)		3-4
Select one of the following options:		6-9
A) Thesis Option		
COMP 299	Thesis	
	or ECPE 299 Thesis	
B) Project Option (non-thesis)		
COMP 291	Graduate Independent Study	
	or ECPE 291 Graduate Independent Study	
COMP 297	Graduate Research	
	or ECPE 297 Graduate Research	
C) Course Work Option (non-thesis)		
Courses approved by advisor as coherent plan		
Concentration Requirements		
Electives approved by advisor as coherent plan *		15

* Minimum of 12 units of 200 level ECPE or COMP courses for the concentration.

Master of Science in Engineering Science with a concentration in Mechanical Engineering

Students must complete a minimum of 30 units with a Pacific cumulative grade point average of 3.0 in order to earn the Master of Science in Engineering Science degree.

Core Courses

ENGR 201	Techniques in Research	3
Select one of the following Math or Computational Science Elective:		3
ENGR 219	Numerical Methods for Engineering	
ENGR 250	Probability and Statistics for Engineering and Computer Science	
Breadth Elective (one from approved list for concentration)		3-4
Select one of the following options:		6-9
A) Thesis Option		
ENGR 299	Thesis	
B) Project Option (non-thesis)		
ENGR 291	Graduate Independent Study	
ENGR 297	Graduate Research	
C) Course Work Option (non-thesis)		
Courses approved by advisor as coherent plan		
Concentration Requirements		
Four electives approved by advisor as coherent plan		12
Additional Elective		3

Master of Science in Engineering Science with a concentration in Engineering Management

Students must complete a minimum of 30 units with a Pacific cumulative grade point average of 3.0 in order to earn the Master of Science in Engineering Science degree. A single course cannot fulfill requirements in both the MSES and BS degree.

EMGT 262	Applied Analytics for Decision Making	3
ENGR 201	Techniques in Research	3
ENGR 212	Technology Venturing	3
ENGR 250	Probability and Statistics for Engineering and Computer Science	3
ENGR 290	Engineering Project Management and Leadership	3
ENGR 292	Managing Science Technology and Innovation	3
Four Electives Approved by Advisor as Coherent Plan		12

Bioengineering Courses

BENG 103. Biomaterials. 4 Units.

This course discusses biomaterials and lays the ground work for topics such as mechanical chemical, and thermal properties of replacement materials and tissues. Implantation of materials in the body are studies studied from the biological point of view. Prerequisites: Completion of all Fundamental Skills; CHEM 24 or CHEM 025 or CHEM 027; BIOL 061 with a "C-" or better.

BENG 104. Biomedical Imaging. 4 Units.

This course discusses major medical imaging modalities in radiology, including X-ray, CT, nuclear medicine, ultrasound, and MRI. Specific contents include physical principle of each imaging modality; instrumentation and data acquisition/image reconstruction strategy, clinical applications and imaging techniques. Prerequisites: MATH 055, PHYS 055, COMP 051 or ENGR 019.

BENG 108. Engineering Physiology. 5 Units.

This course is a lecture and lab-based review of the functions of the major organ systems of vertebrates with emphasis on the human body. Lectures cover basic anatomy, function and regulation of the nervous, endocrine, sensory, muscular, cardiovascular, respiratory, and excretory systems, with the underlying theme of maintaining homeostasis while responding to physiological disturbances. Lab exercises demonstrate basic physiological processes and emphasize techniques of instrument-based data acquisition and data presentation. Prerequisites: Completion of all Fundamental Skills; BIOL 61; CHEM 24 or CHEM 25 all with a "C-" or better or permission of instructor.

BENG 124. Biomechanics. 4 Units.

This course discusses concepts of engineering mechanics including stress, strain, deformation, and analysis of structures with application to biomechanical phenomena over a range of biological length scales. Engineering mechanics concepts are used to evaluate forces and moments acting on human joints, forces in musculoskeletal tissue, material properties of biological tissues, and disease state conditions. Prerequisites: Completion of all Fundamental Skills; ENGR 020 with a "C-" or better. Prerequisite may be taken concurrently: MATH 057 with a "C-" or better.

BENG 130. Biotransport. 4 Units.

This course focuses on momentum transport (viscous flow) and mass transport (diffusion and convection) in living systems. The fundamental principles of momentum and mass transfer are explored and laws of conservation applied to develop mathematical descriptions of physiological and engineering systems across a range of length scales. Students develop technical writing skills and learn to use computation fluid dynamics simulation tools. Prerequisites: Completion of all Fundamental Skills; MATH 057; PHYS 053 with a "C-" or better.

BENG 140. Introduction to Tissue Engineering. 4 Units.

Tissue engineering is a multidisciplinary and collaborative field that applies the principles of engineering and biology toward the development of biological substitutes that restore, maintain, and improve tissue function. In this course, there will be an overview of tissue engineering, including discussion of cell sources, cell-material interactions, and assessment of engineering outcome through destructive and nondestructive means with case studies of specific types of tissue engineering including skin, bone, cartilage, bladder, and liver. Finally, ethical standards for different techniques in tissue engineering will be discussed. Prerequisites: Completion of all Fundamental Skills; BIOL 061; BENG 103 all with a "C-" or better or permission of instructor.

BENG 154. Introduction to Magnetic Resonance Imaging. 4 Units.

Introduction to the physics, techniques, and applications of magnetic resonance imaging (MRI) in basic sciences and the clinic. Basics of nuclear magnetic resonance physics, and Fourier transform, MRI hardware, and MR imaging principles including signal generation, detection, and spatial localization techniques. Applications of MRI including tissue relaxometry measurement and diffusion weighted imaging of biological tissues, imagining of anatomy, and function. Prerequisites: Completion of all Fundamental Skills; BENG 104 with a "C-" or better or permission of instructor.

BENG 171. Bioelectricity. 4 Units.

This course provides the student with an understanding of the origins, function, and measurement of electrical potentials and currents within biological tissues, such as nerve, muscle, and heart. Topics include: the bioelectrical properties of ion channels, neurons, the synapse and neuromuscular junction, adaptation and learning in small networks of neurons, the functional organization of bioelectrical systems, and bioelectrical measurement and stimulation of tissues such as the heart and brain. Prerequisites: Completion of all Fundamental Skills; ECPE 041/ ECPE 041L; Prerequisite may be taken concurrently: MATH 057 with a "C-" or better.

BENG 175. Human/Brain Machine Interface. 3 Units.

Human/Brain Machine interface (HMI/BMI) is a direct communication pathway between human signals such as heart activity, electro dermal activity, and brain with an external device. Bioelectrical activity can be employed directly to provide information or predict the human alertness, stress level, health or control external devices such as an external keyboard and robotic arm. This topic includes the physiology of generation of human vital signals, designing interface device, and developing offline and real-time computational algorithms for controlling external devices. Prerequisites: Completion of all Fundamental Skills; ENGR 19 or COMP 51 or COMP 61 with a "C-" or better; MATH 53 with a "C-" or better; and junior standing.

BENG 187. Professional Practice. 1-18 Units.**BENG 191. Independent Study. 1-4 Units.**

Special individual projects are undertaken under the direction of one or more faculty members who are knowledgeable in the particular field of study. Permission of department chairperson and faculty members involved.

BENG 194. Bioengineering Project Proposal. 3 Units.

This course provides an introduction to the engineering design process. Students apply basic sciences, mathematics, and engineering topics to meet a stated objective. Students will write a proposal for a comprehensive design project, in which they establish design objectives and criteria, analyze solution alternatives, and synthesize a problem. Consideration for engineering standards, realistic constraints, ethics, and safety is included. Prerequisites: Completion of all Fundamental Skills, Junior or Senior standing, BENG 124 or BENG 103, may be taken concurrently, with a "C-" or better or permission of instructor.

BENG 195. Senior Project. 3 Units.

In this course, students will complete the engineering design process. Students will design and evaluate an engineering solution to an existing problem. Students apply basic sciences, mathematics and engineering topics to implement a solution that meets stated design objectives and criteria. Students will also test prototypes to evaluate design performance. Design documentation and demonstration are required. Includes both written and oral reports and presentations. Prerequisite may be taken concurrently: BENG 194 with a "C-" or better or permission of instructor.

BENG 197. Undergraduate Research. 1-4 Units.

This course is applied or basic research in bioengineering under faculty supervision. Permission of faculty supervisor and department chair. Students must be in good academic standing.

BENG 197D. Undergraduate Research. 1-4 Units.**BENG 202. Biosensor. 3 Units.**

This course provides a comprehensive introduction to the basic features of biosensors. Discussion topics include types of most common biological agents and the ways in which they can be interfaced with a variety of transducers to create a biosensor for biomedical applications. The focus is on optical biosensors and systems (e.g. fluorescence spectroscopy, microscopy). Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and BENG 103 with a "C" or better or permission of instructor.

BENG 205. Advanced Biomaterials. 3 Units.

Students study the strategies and fundamental bioengineering design criteria behind the development of cell-based tissue substitutes, artificial skin, muscle, tendons, bone, and extracorporeal systems that use either synthetic materials or hybrid (biological-synthetic) systems. Topics include biocompatibility, biological grafts and bioreactors. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and BENG 103 with a "C" or better.

BENG 291. Graduate Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

BENG 293. Special Topics. 1-4 Units.

Special courses are organized and offered from time to time to meet the needs or interests of a group of students.

BENG 297. Graduate Research. 1-4 Units.

Approval by the faculty supervisor and the department chairperson is required. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

BENG 299. Thesis. 1-6 Units.

Minimum of six units is required for Thesis Option students. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and permission of the research advisor.

Civil Engineering Courses

CIVL 100. Introduction to Structural Engineering. 4 Units.

Students examine the theory and applications of structural analysis and design. Topics include determination of loads, analysis of beams, trusses and frames, influence lines and indeterminate structures. Laboratory is included. Prerequisites: Completion of all Fundamental Skills, CIVL 15, ENGR 19, Prerequisite can be taken concurrently: ENGR 121 with a "C-" or better (Spring).

CIVL 130. Fluid Mechanics I. 3 Units.

Students study the physical properties of fluids, statics and dynamics of incompressible fluids that include hydrostatics, conservation of mass, energy and momentum principles, laminar and turbulent flow with emphasis on pipe flow. Prerequisite: Completion of all Fundamental Skills and ENGR 120 with a "C-" or better. Corequisite: CIVL 130L.

CIVL 130L. Fluid Mechanics I Lab. 1 Unit.

Experimental analysis of concepts are discussed in CIVL 130. Prerequisite: Completion of all Fundamental Skills and ENGR 120 with a "C-" or better. Corequisite: CIVL 130.

CIVL 132. Introduction to Environmental Engineering. 4 Units.

Students are introduced to the physical, chemical, and biological processes associated with water quality in natural environments and engineering systems. Topics include operation and design of water and wastewater treatment facilities as well as the occurrence, behavior and control of indoor and regional air pollution. Laboratory is included. Prerequisites: Completion of all Fundamental Skills, CIVL 015, CIVL 060 with a "C-" or better.

CIVL 133. Water Resources Engineering. 4 Units.

Students examine hydraulic analysis and design that include pipe flow and open channel flow. Topics include elements of the hydrological cycle, deterministic and probabilistic analysis of rainfall-runoff data for estimation and design, and the application of computers in hydrologic and hydraulic design. Laboratory is included. Prerequisites: Completion of all Fundamental Skills, CIVL 015, CIVL 130 with a "C-" or better.

CIVL 134. Groundwater. 4 Units.

Aquifer properties, groundwater hydraulics in confined and unconfined aquifers under steady and unsteady flow conditions. Well hydraulics under ideal and non-ideal conditions. Constituent transport and fate in groundwater. Prerequisites: Completion of all Fundamental Skills; CIVL 130; MATH 057 with a "C-" or better.

CIVL 136. Design of Water Quality Control Facilities. 4 Units.

This advanced course covers the physical, chemical, and biological processes that are involved in the design of water and wastewater treatment plant facilities as well as applicable design standards and regulations. Prerequisites: Completion of all Fundamental Skills, CIVL 130, CIVL 132 with a "C-" or better.

CIVL 138. Solid Waste Systems Design and Management. 3 Units.

This is an introductory course to solid waste systems, that analyzes of problems associated with storage, collection, transport, processing, and disposal of solid wastes. Students review of current and expected regulatory requirements and the planning and design of solid waste management components that include systems and processes for solid waste prevention, recycling/composting, incineration, and landfilling. Prerequisite: Completion of all Fundamental Skills and CIVL 132 with a "C-" or better.

CIVL 140. Introduction to Geotechnical Engineering. 4 Units.

This introductory course covers the fundamentals of geotechnical engineering, that includes the characterization of soils and their behavior as an engineering material. Topics, include classification of soils, compaction, permeability, and consolidation. Also covered is design applications that include settlement predictions, strength characterization, soil exploration programs, and an overview of shallow and deep foundations. The course includes laboratory work. Prerequisites: Completion of all Fundamental Skills, CIVL 015, ENGR 121 with a "C-" or better.

CIVL 141. Earth Structure Design. 4 Units.

Evaluation of drained and undrained field conditions and the relationship between temporary and permanent design conditions over time. In-situ tests, including SPT and CPT. Analysis of lateral stresses in soil masses. Design of slopes, cantilever retaining walls, sheet piles, anchored bulkheads, and mechanically-stabilized earth walls. Design includes analysis of effects of water and seismic conditions, including liquefaction. Prerequisite: CIVL 140.

CIVL 145. Engineering Geology. 4 Units.

This introductory course to is the study of geology in which geologic principles, data and techniques are applied to civil engineering problems. Also listed as GEOS 145. Prerequisites: Completion of all Fundamental Skills; GEOS 051 or GEOS 061 or CIVL 140 with a "C-" or better.

CIVL 150. Transportation Engineering. 4 Units.

Students study the considerations and procedures in the planning, design, and operation of various transportation systems with primary emphasis on highways. Prerequisites: Completion of all Fundamental Skills. Junior or Senior standing.

CIVL 151. Construction Engineering. 3 Units.

An introduction to construction engineering and construction management. Construction engineering topics include construction processes and construction econometrics. Construction management topics include estimating, planning, bidding, and scheduling. Prerequisites: Completion of all Fundamental Skills. Junior or Senior standing.

CIVL 160. Structural Analysis. 3 Units.

Students analyze the behavior of trusses and framed structures under gravity and lateral loads. Other topics include analysis of shear walls, the use of structural analysis software, and the buckling of frames. Prerequisites: Completion of all Fundamental Skills; CIVL 100 and MATH 057 with a "C-" or better.

CIVL 163. Introduction to Earthquake Engineering. 3 Units.

Determination of loads on structures due to earthquakes. Overview of seismology. Methods of estimating equivalent static lateral forces; response spectrum and time history analysis. Concepts of mass, damping and stiffness for typical structures. Design for inelastic behavior. Numerical solutions and code requirements. Prerequisites: Completion of all Fundamental Skills, ENGR 019, ENGR 121 with a "C-" or better.

CIVL 164. Structural Timber Design. 4 Units.

Students will study the design of timber structural members, specifically tension, compression, flexural, and beam-column elements and connections to satisfy design code requirements. Prerequisite, may be taken concurrently: CIVL 100.

CIVL 165. Structural Steel Design. 4 Units.

Students study the design of steel structural members, specifically tension, compression, flexural, and beam-column elements and connections to satisfy design code requirements. Prerequisite: Completion of all Fundamental Skills. Prerequisite may be taken concurrently: CIVL 100 with a "C-" or better.

CIVL 166. Reinforced Concrete Design. 4 Units.

Students study the design and proportioning of structural members, specifically beams, columns, one-way slabs, footings, and walls to satisfy design criteria for reinforced concrete systems. Prerequisite: Completion of all Fundamental Skills. Prerequisite may be taken concurrently: CIVL 100 with a "C-" or better.

CIVL 171. Water and Environmental Policy. 3 Units.

This course introduces students to Federal and State of California environmental regulations pertaining to air, water, hazardous wastes, and toxic substances. Topics include an overview of water rights and environmental impact assessment, relevant case studies, and examples of monitoring and enforcement issues. Prerequisite: Completion of all Fundamental Skills. Junior or Senior standing. (ENST)

CIVL 173. Sustainable Engineering. 3 Units.

This interdisciplinary course provides an introduction to principles and practice of sustainable engineering. Topics include the analysis of economic, social, and environmental factors, life cycle assessment, resource use and waste generation in engineering products and processes. The course also examines case studies, readings, and class discussion emphasizes analysis and development of sustainable solutions. Prerequisite: Completion of all Fundamental Skills. Junior or Senior standing.

CIVL 180. Engineering Synthesis. 4 Units.

This course is a culminating experience wherein a group of students synthesize their previous class work into one project. Both technical and non-technical concerns are addressed. One or more faculty members and/or professional engineers are involved depending upon the fields covered in the project. Prerequisites: Completion of all Fundamental Skills; EMGT 170 and 2 of the following: CIVL 100, CIVL 132, CIVL 133, CIVL 140 with a "C-" or better. Senior standing.

CIVL 191. Independent Study. 1-4 Units.

Students undertake special individual projects under the direction of one or more faculty members. Permission of department chairperson and faculty member involved.

CIVL 193. Special Topics. 4 Units.

Upper division elective subject area based on expertise of faculty members.

CIVL 197. Undergraduate Research. 1-4 Units.

This course is applied or basic research in civil engineering under faculty supervision. Permission of faculty supervisor and department chair. Student must be in good academic standing.

CIVL 231. Surface Water Quality Modeling. 3 Units.

Application of mass balance principles develop mathematical models that simulate the transport and fate of water quality constituents in rivers, estuaries, and lakes. Numerical methods that solve discrete systems of steady-state and transient equations using Excel and MATLAB are emphasized. Prerequisites: ENGR 019, CIVL 132, Graduate or blended students in the School of Engineering and Computer Science with a "C" or better or permission of instructor.

CIVL 233. Advanced Hydraulic Systems Analysis. 3 Units.

Analysis and modeling of steady and unsteady flows in pipe systems, pipe networks, gradually and rapidly varied flows and hydraulic structures in open channels. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and CIVL 130 with a "C" or better or permission of instructor.

CIVL 236. Physical and Chemical Treatment Processes. 3 Units.

Physical and chemical processes found in nature and used in engineered systems to treat water and air. Design of reactors and unit processes incorporate sedimentation, flocculation, precipitation, gas transfer, adsorption, filtration, and disinfection. Prerequisites: CIVL 132 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

CIVL 237. Biological Treatment Processes. 3 Units.

Biological processes occurring naturally and developed in engineered treatment systems. Includes applicable fundamentals of microbiology, microbially-mediated chemical reactions, kinetics, design of suspended growth and fixed-film treatment systems, and nutrient removal. Prerequisites: CIVL 132 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

CIVL 238. Industrial and Hazardous Waste Management. 3 Units.

Industrial and Hazardous Waste Management and Treatment is an advanced level course on technical aspects concerning the management of chemical and radioactive wastes. The course addresses regulation, management and characterization of industrial wastes, especially hazardous wastes. Emphasis is placed on site characterization, investigation of pathways and transformations, and engineered treatment processes for toxic and reactive industrial materials. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

CIVL 259. Sensor Networks for Engineering Systems. 3 Units.

This course introduces sensor networks for infrastructure systems from sensor selection, system design, implementation, acquisition, and analysis. Examination of application across multiple engineering disciplines. Project based components with laboratory. Prerequisites: ECPE 131, ECPE 121; or ENGR 019, ENGR 121; or COMP 055, COMP 157 with a "C" or better; Graduate or blended students in the School of Engineering and Computer Science; or permission of instructor.

CIVL 263. Earthquake Engineering. 3 Units.

This course is an overview of seismology. Course content includes determination of loads on structures due to earthquakes, methods of estimating equivalent static lateral forces, response spectrum and time history analysis. Other topics include concepts of mass, damping and stiffness for typical structures, design for inelastic behavior. Numerical solutions and code requirements. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and CIVL 100 with a "C" or better or permission of instructor.

CIVL 265. Advanced Structural Engineering. 3 Units.

Students examine the design of steel structural members that include composite beams, plate girders and connections following the AISC specifications in addition to economy evaluation of building design, and design of frame structures and second order effects. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and CIVL 165 with a "C" or better or permission of instructor.

CIVL 266. Advanced Reinforced Concrete Design. 3 Units.

Students study the design and proportioning of structural systems to satisfy design criteria for reinforced concrete and pre-stress design in concrete. Topics include retaining walls, slabs, footing, and other structural members, Prerequisites: CIVL 166 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

CIVL 267. Design of Timber Structures. 3 Units.

Students study the design and analysis of timber structures due to gravity, lateral and combined loadings. Both member and connection details are considered. The design procedures, material properties and allowable stress computations are based on UBC, and NDS and other governing standards. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science, CIVL 100, MECH 120 with a "C" or better or permission of instructor.

CIVL 275. Microbiology of Engineered Systems. 3 Units.

An introduction to the concepts of environmental microbiology for upper division undergraduates and graduate students in engineering or environmental sciences who may not possess a strong background in the biological sciences. This course will emphasize the fundamental of microbiology and microbial ecology is described in the context of environmental engineering applications. Concepts relating to energy generation, metabolism and kinetics are emphasized. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

CIVL 278. Ecological Engineering. 3 Units.

This course is a graduate-level introduction to the field of ecological engineering. Topics include the fundamental concepts of ecology and the application of ecological concepts to engineered systems. The course focuses on understanding large-scale biogeochemical cycles, investigating how these cycles have been disrupted in engineering systems, and evaluating tools and alternatives for restoring biogeochemical cycles within engineering systems. The students evaluate and apply the concepts developed in class to the resolution of ecological engineering challenges in example engineered landscapes. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science.

CIVL 291. Graduate Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

CIVL 293. Special Topics. 1-4 Units.

Special courses are organized and offered from time to time to meet the needs or interests of a group of students. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

CIVL 297. Graduate Research. 1-4 Units.

Applied or basic research in engineering or computer science under faculty supervision. Approval by the faculty supervisor and the department chairperson is required. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

CIVL 299. Thesis. 1-6 Units.

Minimum of six units are required for Thesis Option students. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and permission of the research advisor.

Computer Science Courses

COMP 127. Web Applications. 4 Units.

The World-Wide Web consists of client-server applications operating over the Internet. This course introduces the skills and techniques for designing and developing web applications. Topics include: client-server architectures, web servers and web browsers, server-side programming, client-side programming, form processing, state management and multimedia. Prerequisites: Completion of all Fundamental Skills and COMP 053 with a "C-" or better or permission of instructor. (Fall, even years).

COMP 129. Software Engineering. 4 Units.

Students gain practical experience in dealing with medium to large scale software systems. Students learn how current analysis and design methodologies are used to develop the abstractions necessary to understand large systems. Students also learn how such methodologies and abstractions are used to communicate with coworkers and clients about the analysis and design. Because communication is an essential skill in large system development, students are expected to produce documents and presentations of professional quality and depth. Prerequisites: Completion of all Fundamental Skills and COMP 055 with a "C-" or better. (Spring, every year).

COMP 135. Human-Computer Interface Design. 3 Units.

Human-Computer Interface (HCI) Design focuses on the relationship between humans and computers or other physical devices. This course helps students develop an understanding of the common problems in designing these interfaces and presents a set of design techniques to ensure that designs are both useful and useable. Prerequisite: Completion of all Fundamental Skills. Junior standing. (Spring, every year).

COMP 137. Parallel Computing. 3 Units.

Parallel computing is a science which solves a large problem by giving small parts of the problem to many computers to solve and then combining the solutions for the parts into a solution for the problem. This course introduces architectures and implementation techniques to support parallel computation. Students are expected to design and implement an original parallel application as a term project. Prerequisite: Completion of all Fundamental Skills and COMP 053 with a "C-" or better. Corequisite: ECPE 170. (Spring, every year).

COMP 141. Programming Languages. 4 Units.

Topics in evaluation, design, and development of programming languages. Topics include type systems, variables and scope, functions, parameter passing, data hiding and abstractions, recursion, memory allocation, grammars and parsing, compiler architecture, programming paradigms, and comparison of programming languages and environments. Prerequisites: Completion of Fundamental Skills and COMP 053 with a "C-" or better.

COMP 147. Computing Theory. 4 Units.

Students study automata, formal languages and computability. Topics include finite state automata, regular languages, pushdown automata, context-free languages, Turing machines; decidability, reducibility, and time complexity that includes NP-completeness and intractability. Prerequisites: Completion of all Fundamental Skills; COMP 047 or ECPE 071 or MATH 074 with a "C-" or better.

COMP 151. Artificial Intelligence. 3 Units.

Students study fundamental concepts, techniques and tools used in Artificial Intelligence. Topics include knowledge representation, search techniques, machine learning and problem solving strategies. Also listed as ECPE 151. Prerequisites: Completion of all Fundamental Skills and COMP 053 with a "C-" or better. (Fall, odd years).

COMP 153. Computer Graphics. 3 Units.

An introduction to two and three dimensional computer graphics. Basic representations and mathematical concepts, object modeling, viewing, lighting and shading. Programming using OpenGL and other computer graphics applications. Also listed as ECPE 153. Prerequisites: Completion of all Fundamental Skills and COMP 053 with a "C-" or better. (Fall, even years).

COMP 155. Computer Simulation. 4 Units.

This course explores digital simulation, in which a model of a system is executed on a computer. The course focuses on modeling methodologies, mathematical techniques for implementing models, and statistical techniques for analyzing the results of simulations. Students develop simulations using both simulation development toolkits and general-purpose programming languages. Also listed as EMT 155. Prerequisites: Completion of all Fundamental Skills; MATH 037 or MATH 039; MATH 045 or MATH 051, COMP 051 or ENGR 019 with a "C-" or better. (Fall, even years).

COMP 157. Design and Analysis of Algorithms. 4 Units.

Topics for this course include complexity analysis, algorithms for searching, sorting, pattern matching, combinatorial problems, optimization problems, backtracking, algorithms related to number theory, graph algorithms, and the limitations of algorithm power. Prerequisites: Completion of all Fundamental Skills; COMP 047 or MATH 074; COMP 053; MATH 045 or MATH 051 with a "C-" or better.

COMP 159. Computer Game Technologies. 4 Units.

This course surveys the technologies and processes used for modern video game development. Course topics include software engineering, media creation and management, hardware interfaces, user interaction, 3D mathematics and common algorithms and data structures to support graphics, physics and artificial intelligence. Prerequisite: Completion of all Fundamental Skills and COMP 055 with a "C-" or better. (Fall, odd years).

COMP 162. Data Analytics Programming. 4 Units.

This course develops programming skills for computational data analysis. The course emphasizes programming for statistical analysis, machine learning and predictive modeling. Other topics include programming packages for handling, preparation, and manipulation of data, as well as visualization tools for exploration and presentation of data and results. The course emphasizes hands-on data and analysis using a variety of real-world data sets and analytical objectives. Prerequisites: Completion of all Fundamental Skills; COMP 051 or COMP 061.

COMP 163. Database Management Systems. 4 Units.

A database management system (DBMS) is a computer application designed for the efficient and effective storage, access and update of large volumes of data. This course looks at such systems from two perspectives. The user-center perspective focuses on how a DBMS is used to build support for a data intensive application. This perspective includes examination of common data models, query languages and design techniques. The system implementation perspective focuses on the policies, algorithms and data structures used to design and implement a DBMS. Prerequisites: Completion of all Fundamental Skills and COMP 053 with a "C-" or better. Corequisite: COMP 047 or MATH 074. (Spring, every year).

COMP 173. Operating Systems. 4 Units.

Students are introduced to the fundamental concepts of modern operating systems. Topics include an overview of the computer hardware that supports the operating system, process management, threads, and CPU scheduling. Students also study process synchronization that uses primitive and high-level languages, virtual memory management, file systems, system protection, and distributed systems. Prerequisites: Completion of all Fundamental Skills; COMP 053 and ECPE 170 with a "C-" or better or permission of instructor.

COMP 175. System Administration and Security. 3 Units.

Students are introduced to an operating system from an administrator's standpoint. Topics include installation with the proper allocation of disk resources, maintaining the operating system and various subsystems, security issues that include server hardening, host firewalls and network security issues. Students also study account administration in a networked environment, change management and intrusion detection. Prerequisites: Completion of all fundamental skills and familiarity with console-based operating systems commands. Junior standing. (Fall, every year).

COMP 177. Computer Networking. 4 Units.

Topics examined in this course include computer networks and the internet, LAN and WAN architectures, and packet switched networks and routing. Students learn about the 7-layer OSI model and internet protocol stack, socket programming and client/server systems, wireless and security. The course includes a laboratory. Also listed as ECPE 177. Prerequisites: Completion of all Fundamental Skills; COMP 053 and ECPE 170 with a "C-" or better. Junior or Senior standing. (Fall, every year).

COMP 178. Computer Network Security. 3 Units.

This course is an examination of the pervasive security threats related to the Internet, data communications and networking. Topics include TCP/IP protocols, authentication, encryption, malware, cybercrime, and social engineering. Emphasis is on computer and network attack methods, their detection, prevention and analysis, and the integration of the tools and techniques employed in this effort. Includes lab. Prerequisites: Completion of all Fundamental Skills and ECPE 170 or COMP 175 with a "C-" or better. (Spring, every year).

COMP 187. Internship in Computer Science. 1-4 Units.

This internship course offers cooperative employment in a professional computer science environment. The internship requires satisfactory completion of the work assignment and written reports. Prerequisites: Completion of all Fundamental Skills; COMP 055 and ENGR 025 with a "C-" or better. Grading is Pass/No Credit only.

COMP 191. Independent Study. 1-4 Units.

Students create student-initiated projects that cover topics not available in regularly scheduled courses. A written proposal that outlines the project and norms for evaluation must be approved by the department chairperson.

COMP 195. CS Senior Project. 4 Units.

In this course, students synthesize their cumulative computer science knowledge through the development of a computer application. Students will establish design objectives and criteria, analyze solution alternatives and evaluate design performance. Students will then implement, test and evaluate the system. Results will include analysis and design documents, the implemented system, test reports and a presentation and demonstration of the project. Prerequisites: Completion of all Fundamental Skills, Senior Standing, COMP 055 with a "C-" or better.

COMP 197. Undergraduate Research. 1-4 Units.

Students conduct supervised research that contributes to current active topics in Computer Science. Topics may be selected by the student, related to faculty research, or provided by industrial sponsors. Permission of Undergraduate Research Coordinator.

COMP 227. Web Development. 3 Units.

This course is about the principles and techniques for designing and developing web applications. Topics include web application design, client-side web programming, and server-side web programming. Students are expected to read online resources and apply techniques to develop a website from scratch. Prerequisites: COMP 141 with a "C" or better and graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 229. Advanced Software Engineering. 3 Units.

Students gain practical experience in dealing with existing software systems. Students learn how existing software engineering practices are used to develop the abstractions necessary to understand and work with such systems. Students also learn how such methodologies and abstractions are used to communicate in a distributed environment with coworkers and clients surrounding the ideation, analysis, design and maintenance of systems. Because communication is an essential skill in large system development, students are expected to produce documents and presentations of professional quality and depth that can function in a remote working environment. Prerequisites: COMP 141 and COMP 157 with a "C" or better and graduate students in the School of Engineering and Computer Science or instructor approval.

COMP 235. Interaction Design. 3 Units.

Interaction Design focuses on the relationship between humans and the use of interactive software applications and other physical devices. This course helps students develop an understanding of the common problems in designing interfaces for apps and devices and presents design and evaluation techniques to ensure that products are both useful and usable.

COMP 241. Programming Language Semantics. 3 Units.

This course studies the foundations of programming languages by exploring the static and dynamic language semantics from a theoretical perspective. Formal techniques are used to specify programming language semantics and the associated provable guarantees that these specifications provide. Prerequisites: COMP 141 and COMP 147 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 251. Machine Learning. 3 Units.

This course introduces concepts of machine learning and statistical pattern recognition at the graduate level. The course covers topics such as linear and logistic regression, classification, clustering, model validation, support vector machines, neural networks, and decision trees. Data wrangling methods and dimensionality reduction are also examined. Prerequisites: COMP 157 with a "C" or better and graduate students in the School of Engineering and Computer Science or instructor approval.

COMP 252. Natural Language Processing. 3 Units.

This course is an introduction to the topic of natural language processing (NLP) from a computational perspective. The course covers both formal and statistical approaches to NLP. Coursework includes programming, analysis and literature review assignments. Topics include: n-gram models, part-of-speech tagging, hidden Markov models, parsing, semantics, information extraction, question answering, dialogue agents and machine translation. Prerequisites: COMP 147, COMP 157 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 253. Virtual Reality. 3 Units.

This course provides an overview of the field of virtual reality (VR). Topics include stereoscopic display, force feedback and haptic simulation, viewer tracking, virtual worlds, 3D user interface issues, augmented reality, and contemporary applications of VR in entertainment, teaching and training. Students gain practical experience designing and evaluating a virtual reality application. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science.

COMP 254. Advanced Graphics Programming. 3 Units.

This course provides a survey of advanced topics in computer graphics. Students will complete several Web-based 3D graphics programming projects, and explore a contemporary research topic related to computer graphics. Prerequisites: COMP 141, COMP 157, and ENGR 201 with a "C" or better and graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 257. Advanced Algorithms. 3 Units.

This course will cover the fundamentals of algorithm design. We will discuss some basic paradigms for reasoning about algorithms and their asymptotic complexity and survey many of the techniques that apply broadly in the design of efficient algorithms. Prerequisites: COMP 157 with a "C" or better and graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 258. Design/Assess of Serious Games. 3 Units.

This course develops the skills and techniques required for the creation of serious games, which are games that have an additional purpose beyond entertainment. Topics include understanding and evaluating the current landscape of serious games, undergoing the research to design a serious game, and then assessing the games created to see if they fulfill their goals as a serious game. This course is intended to prepare students to design, develop and assess multi-purpose software. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 259. Character Animation. 3 Units.

Investigation of algorithmic and data-driven techniques for directing the motion of computer generated characters, with a focus on human-like motion. Coursework will include analysis of published research, programming assignments and an original research project/investigation. Prerequisite: Graduate students in the School of Engineering and Computer Science or permission of the instructor.

COMP 261. Data Science. 3 Units.

This course is about the principles and methods for handling big data. Topics include data sources, data products, data analysis, and data visualization. Students are expected to read technical papers and apply techniques to solve real-world big data problems. Prerequisite: COMP 157 or EMGT 162 with a "C" or better and graduate students in the School of Engineering and Computer Science or instructor approval.

COMP 270. Secure Software Systems. 3 Units.

In this course, students will study best practices for secure software development. Topics will include secure software design, secure coding, and security testing and auditing. Students will learn how cryptographic algorithms work and applications of cryptography in secure software design. Students will write and analyze code that demonstrates specific security development techniques. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and COMP 157 with a "C" or better.

COMP 271. Vulnerabilities. 3 Units.

In this course, students will systematically study the fundamental principles of computer system security. Students will learn to identify vulnerabilities in computer systems and mitigate them. The course takes a practical approach to information security by focusing on real-world examples and hands-on lab activities. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science, and ECPE 170 or COMP 173 with a "C" or better.

COMP 272. Software Reverse Engineering. 3 Units.

The objective of this course is to familiarize students with the practice of reverse engineering programs where the source code is unavailable. By this process, students can discover the specification for a given software program, thereby understanding its operation as well as any data it uses or communication protocols it employs. This knowledge is valuable for identifying and neutralizing malware on a system or discovering software vulnerabilities and patching them during the course of a security audit. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science, and COMP 173 or ECPE 170 with a "C" or better.

COMP 274. Reliable Software Design. 3 Units.

With the technological advancements, critical systems (e.g., in the aerospace industry, healthcare industry, etc.) are being deployed and used in a widespread fashion. This trend, along with the increasing complexity of such systems, necessitate their software components to provide guaranteed reliability and assurance. This course introduces a mathematical foundation for rigorous analysis of computer programs by exploring the logical underpinnings and the tools that are used to reason about program correctness in order to develop high quality and robust software. In this course, students engage in developing programs that formally define system constructs, specifying the properties of interest, and proving the satisfaction of those properties in the system. Prerequisites: COMP 141 and COMP 147 with a "C" or better and graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 277. Advanced Computer Networking. 3 Units.

The modern Internet is a communications system of global scale and high complexity. In this course, students will study the technological underpinnings that enable modern network communication, including routing, network, and application-layer protocols. Wired, wireless, and cellular networks will be examined. The course will include a laboratory, with emphasis placed on determining the current state of a network through network mapping, traffic analysis, and protocol analysis. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science, and COMP 177 or ECPE 177 with a "C" or better.

COMP 278. Cyber Defense and Offense. 3 Units.

This course offers a comprehensive study of the principles and practices of computer system security including operating system security, network security, software security, and web security. Students will learn common threats and vulnerabilities, along with basic principles and techniques when designing a secure system. Hands-on labs will help students gain an understanding on how to think like an adversary, how modern cyber-attacks and defenses work in practice, and how to assess threats and protection mechanisms. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science, and ECPE 170 or COMP 173 with a "C" or better.

COMP 291. Graduate Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

COMP 293. Special Topics. 1-4 Units.

Special courses are organized and offered from time to time to meet the needs or interests of a group of students. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

COMP 297. Graduate Research. 1-4 Units.

Applied or basic research in engineering or computer science under faculty supervision. Approval by the faculty supervisor and the department chairperson is required. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

COMP 297D. Graduate Research. 1-4 Units.**COMP 297E. Graduate Research. 1-4 Units.****COMP 297F. Graduate Research. 1-4 Units.****COMP 297G. Graduate Research. 1-4 Units.****COMP 299. Thesis. 1-6 Units.**

Minimum of six units is required for Thesis Option students. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and permission of the research advisor.

Electrical Computer Engr Courses**ECPE 121. Digital Signal Processing. 4 Units.**

Students analyze discrete-time signals and systems using z transforms and Fourier transforms, the fast Fourier transform and its applications, digital filters and their applications and implementation of DSP algorithms using Matlab and Simulink. Prerequisites: ECPE 041 and MATH 057 with a "C-" or better.

ECPE 124. Digital Image Processing. 4 Units.

This course is the analysis and design of algorithms in digital image processing. Topics include: image formation, file format, pixel-based processing, object recognition, filtering and edge detection, image transforms, segmentation, stereo-vision, and motion tracking. Prerequisites: COMP 053, ECPE 121 with a "C-" or better. Prerequisite that may be taken concurrently: ECPE 121.

ECPE 127. Random Signals. 3 Units.

This course is an introduction to probability and statistics in engineering applications. Students will become familiar with discrete and continuous random variables and their probability models. Topics include counting methods, reliability problems, probability mass functions (PMF), probability density functions (PDF), cumulative distribution functions (CDF), conditional PDF's, expected value and variance, joint and marginal PDF's and CDF's, functions of two random variables, sampling distributions, population parameter estimation, hypothesis testing using statistical software. Prerequisites: Completion of all Fundamental Skills, MATH 055 with a "C-" or better.

ECPE 131. Electronics. 3 Units.

This course introduces students to semiconductor physics. Topics include modeling, analysis, and simulation of analog and digital circuits containing diodes, bipolar junction transistors, and MOSFETs. Other topics include analysis and design of single stage amplifiers, frequency response of amplifiers, gain, bandwidth, DC biasing, and small signal analysis of amplifiers. Prerequisites: Completion of all Fundamental Skills; ECPE 041, ECPE 041L, ECPE 071, ECPE 071L, MATH 055, PHYS 055, with a "C-" or better; AP CHEM with score of 4 or higher, or IB CHEM Higher Level with score of 5 or higher, one year of high school chemistry with a "B-" or better, appropriate score on the Pacific Diagnostic Chemistry test or CHEM 023 with a "C-" or better. Corequisite: ECPE 131L. Prerequisite that may be taken concurrently: ECPE 071, ECPE 071L.

ECPE 131L. Electronics Lab. 1 Unit.

Students examine the use of standard electronic test equipment and simulation tools to analyze, design, and test electronic circuits. Emphasis on analog circuits. Prerequisites: Completion of all Fundamental Skills. Corequisite: ECPE 131.

ECPE 133. Solid State Devices. 4 Units.

This course introduces concepts related to the crystal structure of semiconductors and electronic, optical, and magnetic properties of semiconductors. Dynamics of carriers under equilibrium and non-equilibrium conditions are presented as a frame work for understanding the behavior of a number of devices including Metal-Oxide-Semiconductor (MOS) and Hetero-junction Bipolar (HBT) devices. On such a background, the course builds an understanding of the latest advances in the field. This course is cross listed with EPHY 133 and PHYS 170. Prerequisite: PHYS 055 with a "C-" or better. Prerequisite that may be taken concurrently: MATH 057 with a "C-" or better.

ECPE 135. Power Electronics. 4 Units.

Switch-Mode DC-DC converters, Feedback control of converters, Rectifiers and power factor correction circuits, switch mode DC power supplies, applications to motor control and renewable energy integration to the grid. Includes laboratory. Prerequisites: Completion of all Fundamental Skills; ECPE 131 and ECPE 131L with a "C-" or better. Prerequisite may be taken concurrently: ECPE 121 with a "C-" or better.

ECPE 136. VLSI Design. 4 Units.

Students examine issues in VLSI design. Topics include logic families, sizing, timing models, fabrication, layout, high speed and low power design tradeoffs, circuit simulation and device modeling. Prerequisites: Completion of all Fundamental Skills; ECPE 071, ECPE 071L, ECPE 131, ECPE 131L with a "C-" or better. (Spring odd years).

ECPE 141. Advanced Circuits. 4 Units.

Analysis and design of circuits in the continuous time domain. Topics include: frequency response, Laplace transforms, Fourier transforms, stability and feedback. Applications include high-order filter design and controls. Prerequisites: ECPE 041, ECPE 041L, and MATH 057 with a "C-" or better.

ECPE 144. Applied Electromagnetics. 4 Units.

The purpose of this course is for students to gain an understanding of transmission lines and field theory as it applies to communication circuits and systems. Electromagnetic wave propagation, reflection, and transmission through common materials are examined. This course is cross listed with EPHY 144. Prerequisites: Completion of all Fundamental Skills; PHYS 055, MATH 057, with a "C-" or better.

ECPE 155. Autonomous Robotics. 4 Units.

This course is an overview of the design of autonomous robotics. Students study architectures for robot organization and control, configurations of fixed and mobile robots, sensors and actuators. Students also study the design of algorithms and knowledge representations. Prerequisites: Completion of all Fundamental Skills; COMP 053 and ECPE 172 with a "C-" or better or permission of instructor.

ECPE 161. Automatic Control Systems. 4 Units.

Students study component and system transfer functions, open and closed loop response; stability criteria; applications to engineering systems. this course include a laboratory. Prerequisites: Completion of all Fundamental Skills; Prerequisite that may be taken concurrently: ECPE 121 or ECPE 141.

ECPE 162. Communication Systems. 4 Units.

Students examine signal characterization in time and frequency domains. Topics include baseband communication, pulse code modulation, multiplexing, complex envelope representation of bandpass signals. AM, FM, and digital modulations. Students also examine applications to radio, television, telephone, and cellular phone systems. A laboratory is included. Prerequisites: Completion of all Fundamental Skills and ECPE 121 with a "C-" or better. (Spring).

ECPE 163. Energy Conversion. 4 Units.

Students study three phase power systems. Topics include magnetic circuits, transformers, rotating machines: DC, induction, and synchronous machines as well as equivalent circuits and characteristic curves of transformers and rotating machines, renewable energy sources and technologies. the course includes a laboratory. Prerequisites: Completion of all Fundamental Skills; ECPE 041 and ECPE 041L; PHYS 055 with a "C-" or better.

ECPE 165. Power System Analysis. 3 Units.

Students study electrical power generation and transmission, Three-phase systems, power system component models, per-unit system and single line diagrams, power flow analysis. Prerequisites: Completion of all Fundamental Skills and ECPE 041 with a "C-" or better. Junior standing.

ECPE 170. Computer Systems and Networks. 4 Units.

This course is a comprehensive and holistic examination of the modern computing environment. Students gain an understanding of the various hardware and software components that enable computers and networks to process information and execute applications. Students learn to apply this knowledge in the development of efficient and robust software applications. Prerequisites: Completion of all Fundamental Skills; ECPE 071, COMP 053 with a "C-" or better.

ECPE 172. Microcontrollers. 4 Units.

Students study the design and implementation of digital monitoring and control systems that use micro-controllers. Topics include hardware and software development, interfacing input and output devices, assembly and C programming as well as representative applications. The course includes a laboratory. Prerequisites: Completion of all Fundamental Skills; COMP 051, ECPE 071, and ECPE 071L with a "C-" or better.

ECPE 173. Computer Organization and Arch. 3 Units.

The objective of this course is to give students an understanding of how a complete modern computer system operates. Students learn about design of control, datapath and arithmetic-logic units. Other topics include pipelining, memory hierarchy and assembly language programming. Prerequisites: Completion of all Fundamental Skills; ECPE 170; ECPE 172 or ECPE 174 with a "C-" or better.

ECPE 174. Advanced Digital Design. 4 Units.

Students learn how to analysis, design, and implement synchronous state machines using programmable logic devices. Topics include CAD-based simulation and development that use schematic capture and hardware description languages, and representative applications. The course includes a laboratory. Prerequisites: Completion of all Fundamental Skills; ECPE 071 and ECPE 071L with a "C-" or better.

ECPE 177. Computer Networking. 4 Units.

Students study computer networks and the Internet. Topics include LAN and WAN architectures, packet switched networks and routing, the 7-layer OSI model and Internet protocol stack, socket programming and client/server systems as well as wireless security. The course includes a laboratory. Also listed as COMP 177. Prerequisites: Completion of all Fundamental Skills; COMP 053 and ECPE 170 with a "C-" or better. Junior or Senior standing.

ECPE 178. Computer Network Security. 3 Units.

This course is an examination of the pervasive security threats related to the Internet, data communications and networking. Topics include TCP/IP protocols, authentication, encryption, malware, cybercrime, and social engineering. Emphasis is on computer and network attack methods, their detection, prevention and analysis, and the integration of the tools and techniques employed in this effort. Includes lab. Prerequisites: Completion of all Fundamental Skills and ECPE 170 or COMP 175 with a "C-" or better.

ECPE 191. Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty members knowledgeable in the particular field of study. Permission of department chairperson and faculty members involved.

ECPE 195. Senior Project I. 2 Units.

This first semester capstone design course instructs students in the application of design processes and interdisciplinary teamwork. Student teams select a project and develop requirements, test, and design documents. Projects incorporate consideration of engineering standards and realistic constraints such as economics, the environment, sustainability, manufacturability, or safety. Components are evaluated and selected. Feasibility is analyzed through prototyping or simulation and results are presented via oral and written reports. This course is cross listed with EPHY 195. Prerequisites: Completion of all Fundamental Skills; ECPE 131 and ECPE 131L; ECPE 121, ECPE 141, ECPE 172 or ECPE 174 with a "C-" or better.

ECPE 196. Senior Project II. 2 Units.

This second-semester capstone design course, interdisciplinary teams complete the design of their projects. Full implementation is completed, including iteration, optimization, and refinement; justifications for design decisions are analyzed. Testing is performed and results are evaluated to demonstrate satisfaction of specifications. Final oral and written reports, complete documentation, and a project demonstration are required. This course is cross listed with EPHY 196. Prerequisites: Completion of all Fundamental Skills; ECPE 195 with a "C-" or better.

ECPE 197. Undergraduate Research. 1-4 Units.

This course offers applied or basic research in electrical and/or computer engineering under faculty supervision. Permission of faculty supervisor and department chair. The student must be in good academic standing.

ECPE 225. Digital Signal Processing with Applications. 3 Units.

Topics include discrete time signals, systems, spectral analysis (DTFT), the Discrete Fourier Transform and the Fast Fourier Transform algorithm, decimation and interpolation, multi-rate signal procession, and filtering random signals. Additional course content is speech processing, speech models and characteristics, short time Fourier analysis, linear predictive coding. Image processing: 2D signals and systems, image coding, image enhancement is also addressed. Prerequisites: ECPE 121 with a "C" or better or equivalent and Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

ECPE 226. Computational Intelligence. 3 Units.

Computational intelligence is broadly defined as the concepts, models, and algorithms inspired by intelligent biological systems. Students will apply computational intelligence paradigms and techniques to real world data sets and optimization problems. Topics include types of learning, theory of generalization, linear and logistic regression, non-linear transformation, fundamentals of neural networks, evolutionary computation and optimization, fuzzy set theory and fuzzy logic, and other current topics in computational intelligence. Familiarity with basics in linear algebra, probability, and analysis of algorithms recommended. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science.

ECPE 233. Quantum and Nano Devices. 3 Units.

Students study advanced topics related to recent development of the emerging field of nanoelectronics where the feature lengths of the electron devices are of the order of several nanometers. They also study transport phenomenon in nano-structures that use a quantum atomistic transport approach. Topics include: quantum confined effects, nanofabrication, quantum wells, quantum wires, quantum dots, and quantum optoelectronic devices. The purpose of this course is to prepare the framework for analyzing, modeling, and designing of these non-scale electron devices. Prerequisites: familiarity with MATLAB, light familiarity with physics of semiconductor devices, light exposure to quantum physics, ability to solve second order differential equations, and an exposure to complex analysis. Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

ECPE 251. High-Performance Computing. 3 Units.

This course investigates modern HPC systems and architectures including multiprocessor clusters, General-Purpose Graphical Processing Units (GP-GPUs), and Xeon Phi co-processors. Students develop effective parallel programs by applying parallel programming principles, parallelism models, and communication models. Topics include: taxonomy of parallel machines, supercomputer topology, shared memory systems, OpenMP, distributed systems, message passing interface, CPU architecture, compute unified device architecture, HPC performance modeling. Prerequisite: Graduate or blended student in the School of Engineering and Computer Science and ECPE 170 with a "C" or better.

ECPE 253. Advanced Computer Graphics. 3 Units.

Students study advanced topics in computer-generated graphics such as procedural modeling, surface simplification, shaders, texture synthesis and mapping, volume rendering, ray tracing, photon mapping, image-based rendering techniques, non-photorealistic rendering, 3D hardware/GPUs and animation. Course includes programming projects and presentation of research topics. Prerequisites: COMP 153 or ECPE 153 with a "C" or better, C programming experience (C++ or Java is acceptable, but students are expected to program in C), Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

ECPE 255. Robotics. 3 Units.

This course explores high-level issues of autonomous robotics. The course will focus on theory, design, and implementation of making intelligent and autonomous robots. The course will examine these topics from the perspective of individual robots, swarm robots, and multi-agent robots. Students will learn both theory and practice through simulations and work on robot platforms. Prerequisites: ECPE 170 or ECPE 172 or MECH 104 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science.

ECPE 259. Sensor Networks for Engineering Systems. 3 Units.

This course introduces sensor networks for infrastructure systems from sensor selection, system design, implementation, acquisition, and analysis. Examination of application across multiple engineering disciplines. Project based components with laboratory. Prerequisites: ECPE 131, ECPE 121; or ENGR 019, ENGR 121; or COMP 055, COMP 157 with a "C" or better; Graduate or blended students in the School of Engineering and Computer Science; or permission of instructor.

ECPE 263. Recent Topics in Renewable Energy. 3 Units.

Recent Trends in global warming and the rising cost of energy has resulted in significant interest in renewable energy sources that include solar thermal, solar photovoltaics, hydrogen fuel cells, biomass, geothermal, wind, hydraulic, and hybrid technologies. This course is a survey of these energy sources and covers the theory, economic feasibility, current level of technological development, renewability, abundance, and environmental impacts of the renewable sources and compares them to the non-renewable sources which include oil, gas, coal, nuclear, and other current energy technologies. The emphasis is given to research in these fields by the students' term papers and projects. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

ECPE 276. Cloud Computing. 3 Units.

Cloud computing has become mainstream in the field of information technology, providing highly scalable computing resources for applications with no up-front capital investment and operating costs proportional to the actual use. Students will study the technological underpinnings that enable modern cloud computing, including virtualization technology, datacenter networks, programming models, and middleware systems. This course will provide a survey of current research focused on improving the performance, security, fault-tolerance, and energy efficiency of cloud computing systems. Further, students will utilize these cloud computing technologies as application programmers to construct distributed large-scale data processing systems. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and ECPE 170 with a "C" or better.

ECPE 291. Graduate Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

ECPE 293. Special Topics. 1-4 Units.

Special courses are organized and offered from time to time to meet the needs or interests of a group of students. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

ECPE 297. Graduate Research. 1-4 Units.**ECPE 297D. Graduate Research. 1-4 Units.****ECPE 299. Thesis. 1-6 Units.**

Minimum of six units is required for Thesis Option students. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and permission of the research advisor.

Engineering Management Courses

EMGT 115. Building Information Modeling. 4 Units.

This course provides the basics of design, modeling, scheduling, resource allocation, time/cost tradeoffs, task coordination, team-building, progress monitoring, and post project assessment while using the latest BIM technologies. Students study the lean construction and how to integrate BIM into the project delivery processes. Prerequisite: Completion of all fundamental skills.

EMGT 142. Design and Innovation. 3 Units.

This course brings buyers, sellers and end-users of design, prototyping and testing together in an educational and real problem environment. Students will learn how to identify innovation, and develop, design and market new product or service. Students will also learn the nature and importance of technological innovation in commercial organizations with particular reference to bringing a new product or service off the drawing board, through virtual development, and into a modern pre-sales promotional environment in weekly project deliverables. Prerequisite: Upper division standing in engineering.

EMGT 142L. Design and Innovation Lab. 1 Unit.

The laboratory component of EMGT 142, course provides the basics of Industrial Design techniques including drawing, graphical, presentation and design communication skills. Students learn how to design functional objects, sculpture and use a variety of 2D and 3D applications to produce those models as physical objects. A variety of rapid prototyping methods include: 3D Printing, Vacuum Forming, and Laser Cutting is used in weekly project deliverables. Prerequisite: Upper division. Corequisite: EMGT 142.

EMGT 155. Computer Simulation. 4 Units.

This course explores digital simulation in which a model of a system is implemented and executed on a computer. The course focuses on modeling methodologies, mathematical techniques for implementing models, and statistical techniques for analyzing the results of simulations. Students develop simulations that use both simulation development toolkits and general-purpose programming languages. Also listed as COMP 155. Prerequisites: Completion of all Fundamental Skills; MATH 037 or MATH 039; MATH 045 or MATH 051, COMP 051 or COMP 061 or ENGR 019 with a "C-" or better.

EMGT 162. Introduction to Data Analytics for Engineers and Computer Scientists. 3 Units.

This course introduces students to state-of-the-art topics involving large collection of data. Particular emphasis is made on data collection, data storage and processing, extracting structured data from unstructured data, analytics, visualization, and a number of specific applications. Students explore large amounts of complex, digital data and learn about the tools and skills they need to solve knowledge from voluminous data sets. Prerequisites: ENGR 019 or COMP 051; upper division standing.

EMGT 170. Project Decision Making. 4 Units.

Project decision-making based upon engineering economy studies. This area covers techniques for economic evaluation of alternatives including time value of money, risk costs, effects of inflation, compound interest calculation, minimum attractive rate of return, capital budgeting, break-even analysis, sensitivity analysis, and risk analysis. A second facet of the course covers the fundamental aspects of project management within an engineering context. This area covers the project procurement process, project management and project scheduling. (Summer, Fall).

EMGT 172. Engineering Economy. 3 Units.

This course examines decision-making based upon engineering economy studies. This course covers techniques for economic evaluation of alternatives that includes time, value of money, risk cost, effects of taxation, monetary inflation, compound interest calculations, minimum attractive rate of return, capitol budgeting, break-even analysis, sensitivity analysis and risk analysis. Prerequisite: Completion of all Fundamental Skills.

EMGT 174. Engineering Project Management. 3 Units.

Students study the fundamentals of project management that are used in estimating, planning, coordinating and controlling engineering projects. Topics include fundamentals of specifications and contracts, and the scheduling of projects. Prerequisites: Completion of all Fundamental Skills.

EMGT 176. Systems Engineering Management. 4 Units.

This course provides an introduction to the concepts and process of systems engineering. It uses interactive lectures, participatory class exercises and case studies to illustrate the framing and solution of problems through a systems engineering approach. The course stresses an understanding of the interdisciplinary aspects of systems development, operations and support. Prerequisites: Completion of all Fundamental Skills; MATH 055 with a "C-" or better, or permission of instructor.

EMGT 191. Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty members knowledgeable in the particular field of study. Permission of faculty member involved. The student must be in good academic standing.

EMGT 195. Engineering Management Synthesis. 4 Units.

The capstone course is for Engineering Management majors. Emphasis on integration and application of management concepts. including project proposal and design, with periodic reviews and written and oral reports. Prerequisites: Completion of all Fundamental Skills.

EMGT 197. Undergraduate Research. 1-4 Units.

This course offers applied or basic research in focused topics within Engineering Management under faculty supervision. Permission of faculty supervisor and department chair.

EMGT 215. Advanced Building Information Modeling. 3 Units.

Course provides advanced knowledge of design, modeling, scheduling, resource allocation, time/cost tradeoffs, task coordination, team-building, progress monitoring, and post project assessment while using the latest BIM technologies. Students study lean construction and how to integrate BIM into the project delivery processes. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science.

EMGT 250. Decision Techniques in Engineering. 3 Units.

This course is designed to introduce fundamental and advanced decision techniques applicable to engineering and business processes. The techniques discussed are applicable to complex problems in both professional and personal situations. The tools and techniques address deterministic and stochastic problems, trade-offs, no-linear preferences and group decision making. Class discussions develop a theoretical framework as foundation for practical application within the organization. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and ENGR 250 with a "C" or better.

EMGT 262. Applied Analytics for Decision Making. 3 Units.

This course examines concepts and methods central to analytics and decision making systems. The focus is on the application of management science and artificial intelligence techniques for prescriptive and predictive analytics. Case studies of existing systems are used to reinforce concepts discussed in class. A major component of the course is a project entailing the design, implementation, and evaluation of prototype systems for real world applications. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science.

EMGT 291. Graduate Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

EMGT 293. Special Topics. 4 Units.

Special courses are organized and offered from time to time to meet the needs or interests of a group of students. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

EMGT 297. Graduate Research. 1-4 Units.

Approval by the faculty supervisor and the department chairperson is required. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science and permission of instructor.

EMGT 299. Thesis. 1-6 Units.

Minimum of six units is required for Thesis Option students. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and permission of the research advisor.

General Engineering Courses

ENGR 110. Instrumentation and Experimental Methods. 2 Units.

Students study experimental techniques in the measurement of quantities such as biopotentials, force, pressure, sound, flow, temperature, strain and motion. Topics include statistical analysis and errors in measurement; data analysis and transmission. Students also use of instruments in the laboratory, and prepare a measurement project. Prerequisites: Completion of all Fundamental Skills; MATH 057; BENG 124 or ENGR 121 with a "C-" or better or permission of instructor. Co-Requisite: ENGR 110L.

ENGR 110L. Instrumentation and Experimental Methods Lab. 1 Unit.

Experimental analysis of concepts are discussed in ENGR 110. Prerequisites: Completion of all Fundamental Skills; MATH 057; BENG 124 or ENGR 121 with a "C-" or better or permission of instructor. Co-Requisite: ENGR 110.

ENGR 120. Engineering Mechanics II (Dynamics). 3 Units.

Students examine the fundamental principles of particles and bodies in motion under the action of external forces. Prerequisites: Completion of all Fundamental Skills and ENGR 020 with a "C-" or better.

ENGR 121. Mechanics of Materials. 3 Units.

Students study concepts of stress, strain and deformation, analysis and design of simple elements of structures and machines. Prerequisites: Completion of all Fundamental Skills and ENGR 020 with a "C-" or better. Prerequisite, may be taken concurrently: MATH 057 with a "C-" or better.

ENGR 122. Thermodynamics I. 4 Units.

Students examine the first and second laws of thermodynamics for open and closed systems. Topics include properties of gases and liquids, including entropy and availability. Students are also introduced to the Carnot and ideal Rankine cycles. Prerequisites: Completion of all Fundamental Skills; AP Chem with score of 4 or 5, CHEM IB Higher Level (score of 5, 6, or 7), CHEM 024 or CHEM 025 or CHEM 027 and PHYS 053 with a "C-" or better.

ENGR 150. Engineering and Science-Based Entrepreneurship. 4 Units.

Entrepreneurial businesses are increasingly based on new products, processes and services derived from the realms of engineering and/or science. In this hands-on course a multidisciplinary team of students will develop a business plan around a prototype for an original product or service created by students and/or faculty in engineering or the sciences. The plan will focus on the market, technical, operational, financial and organization/administrative dimensions of the business. Prerequisite: Senior standing.

ENGR 181. Professional Practice. 1-16 Units.

This course offers cooperative employment in a professional engineering environment. Students may register for a variable number of credits that depend upon the length of the work period. The course requires a satisfactory completion of the work assignment and a written report. Grading is on a Pass/Fail basis. Prerequisites: Completion of all Fundamental Skills.

ENGR 182. Professional Practice. 1-16 Units.

This course offers cooperative employment in a professional engineering environment. Students may register for a variable number of credits that depend upon the length of the work period. The course requires a satisfactory completion of the work assignment and a written report. Grading is on a Pass/Fail basis. Prerequisites: Completion of all Fundamental Skills.

ENGR 183. Professional Practice. 1-16 Units.

This course offers cooperative employment in a professional engineering environment. Students may register for a variable number of credits that depend upon the length of the work period. The course requires a satisfactory completion of the work assignment and a written report. Grading is on a Pass/Fail basis. Prerequisites: Completion of all Fundamental Skills.

ENGR 184. Professional Practice. 1-18 Units.

This course offers cooperative employment in a professional engineering environment. Students may register for a variable number of credits that depend upon the length of the work period. The course requires a satisfactory completion of the work assignment and a written report. Grading is on a Pass/Fail basis. Prerequisites: Completion of all Fundamental Skills.

ENGR 185. Professional Practice. 1-18 Units.

This course offers cooperative employment in a professional engineering environment. Students may register for a variable number of credits that depend upon the length of the work period. The course requires a satisfactory completion of the work assignment and a written report. Grading is on a Pass/Fail basis. Prerequisites: Completion of all Fundamental Skills.

ENGR 191. Independent Study. 1-4 Units.**ENGR 201. Techniques in Research. 3 Units.**

Students learn about research design, qualitative and quantitative research, and sources of data. The course will cover data collection procedures, measurement strategies, questionnaire design and content analysis, interviewing techniques, literature surveys; information data bases, probability testing, and inferential statistics. Students will prepare and present a research proposal as part of the course. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

ENGR 212. Technology Venturing. 3 Units.

Science and technology are increasingly driving new product, process and service development throughout the world. Turning a new idea into a useful innovation, however, is challenging. In this course, student teams invent an original technology-based product or process, and evaluate its feasibility from the standpoint of its market, intellectual property, technical, design, and financial potential. Teams also incorporate an international dimension into the feasibility study. At the conclusion of the course, teams present their findings to a panel, who will judge the potential of their new idea, and the team's ability to present their findings in a data based manner. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science.

ENGR 219. Numerical Methods for Engineering. 3 Units.

The primary focus is algorithm implementation within the context of engineering applications. Course topics will include: sources of error and error propagation, eigenvalue/eigenvector computation, solution of linear systems via direct or iterative methods and issues of parallel implementation, least squares and approximation of lab/simulation data, solution of non-linear equations, spline interpolation in one and two dimensions, fast Fourier transforms, numerical differentiation and quadrature, and the numerical solution of ordinary and partial differential equations, including an introduction to finite element methods. Whenever appropriate, relevant aspects of parallel computation will be discussed. Prerequisites: MATH 057 or equivalent with a "C" or better, some programming experience in any language and Graduate or blended students in the School of Engineering and Computer Science.

ENGR 250. Probability and Statistics for Engineering and Computer Science. 3 Units.

Basic axioms of probability models, conditional probabilities and independence, discrete and continuous random variables, multiple random variables and their expected values and variances, models of stochastic processes, noise, stationarity and ergodicity, power spectral densities. Prerequisites: MATH 037 or MATH 039 or MATH 131 or ECPE 127 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science.

ENGR 275. Human/Brain Machine Interface. 3 Units.

Human/Brain Machine interface (HMI/BMI) is a direct communication pathway between human signals such as heart activity, electro dermal activity, and brain with an external device. Bioelectrical activity can be employed directly to provide information or predict the human alertness, stress level, health or control external devices such as an external keyboard and robotic arm. This topic includes the physiology of generation of human vital signals, designing interface device, and developing offline and real-time computational algorithms for controlling external devices. Prerequisites: ENGR 19 or COMP 51 or COMP 61 with a "C-" or better; Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

ENGR 290. Engineering Project Management and Leadership. 3 Units.

This course is directed to the graduate student who has a basic knowledge of project management but seeks to explore the human side and strategic aspects of project management. The course introduces and describes the skills, qualities and attributes needed to successfully lead projects. Among the topics discussed are management styles, strategies, systems engineering, interpersonal competencies and other advanced topics not usually covered in a basic course on project management. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science.

ENGR 291. Graduate Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

ENGR 292. Managing Science Technology and Innovation. 3 Units.

This course provides students with a fundamental understanding of research and development organizations and their categories, and elements needed for a productive research organization, organization effectiveness, managing conflicts in organizations, dealing with diversity in research and scientific organizations. Additional topics include strategic planning, motivation and leadership in research and innovation, the innovation process, technology transfer, and science policy and ethics in science and engineering. Ethics and the Impact of Technology on Society is also addressed. The course has two hours of lecture and one hour of discussion per week. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

ENGR 293. Special Topics. 1-4 Units.

Special courses are organized and offered from time to time to meet the needs or interests of a group of students. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

ENGR 295. Graduate Seminar. 1 Unit.

This course is a graduate paper-reading seminar. Students are expected to read classic and current technical papers and actively participate in class discussion. Each student presents at least one paper per semester. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science.

ENGR 297. Graduate Research. 1-4 Units.

Approval by the faculty supervisor and the department chairperson is required. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

ENGR 299. Thesis. 1-6 Units.

Minimum of six units is required for Thesis Option students. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and permission of research advisor.

Mechanical Engineering Courses

MECH 100. Manufacturing Processes. 3 Units.

This course is a study of traditional manufacturing processes such as formatting, cutting, joining, casting, and heat treating as well as advanced processing methods; manufacturing with polymers, composites, and ceramics in addition to metals, tribology, nondestructive evaluation, and quality control. Laboratory projects involve manufacturing skills, reverse engineering, automated machines, geometric dimensioning and tolerancing, and statistical process control. Prerequisites: Completion of all Fundamental Skills; MECH 015 and ENGR 045 with a "C-" or better. Co-Requirement: MECH 100L.

MECH 100L. Manufacturing Process Lab. 1 Unit.

Experimental analysis of concepts are discussed in MECH 100. Prerequisites: Completion of all Fundamental Skills; MECH 015 and ENGR 045 with a "C-" or better. Co-Requirement: MECH 100.

MECH 104. Introduction to Mechatronics. 3 Units.

A broad understanding of the main components of mechatronic systems; Understanding of the general principles involved in computer controlled machinery, including sensing, actuation and control; Practical knowledge of the development of simple embedded computer programs; Understanding of the practical application of mechatronic systems in applications such as manufacturing, automobile systems and robotics. Prerequisites: ECPE 041, ECPE 041L, ENGR 110, ENGR 120 with a "C-" or better.

MECH 120. Machine Design and Analysis I. 4 Units.

This course builds on fundamental principles learned in statistics, dynamics, and mechanics of materials, and applies them to the design and analysis of machines. Methods for performing load and stress analysis are learned along with analytical methods for solving deflection and stability problems. Static, impact, and fatigue failure theories for machines are also studied. Statistical methods for solving machine design problems are presented, and engineering design practices are integrated throughout the course.

MECH 123. Kinematics and Dynamics of Machinery. 3 Units.

Students learn how to design, analyze and prepare a simulation of complex mechanisms with emphasis on high speed and precision applications. Topics include kinematics and dynamics of planar and three dimensional mechanisms; gyroscopic forces in machines and balancing, and applications to robotics. Prerequisites: Completion of all Fundamental Skills; ENGR 120 and ENGR 121 with a "C-" or better.

MECH 125. Machine Design and Analysis II. 4 Units.

Students learn how to design, analyze, and incorporate a variety of standard parts and devices into machines. These parts and devices include fasteners, gear systems, belt drives, chain drives, shafts, couplings, bearings, springs, clutches, and brakes. Principles of tribology (friction, wear, and lubrication) are introduced and applied to the design of machines. Engineering design practices are integrated throughout the course. Prerequisites: Completion of all Fundamental Skills and MECH 120 with a "C-" or better.

MECH 129. Vibrations. 4 Units.

Students study models of physical systems with lumped and distributed parameters. The studies include free and forced vibrations of machines and structures as well as excitation and response of single degree of freedom systems. The course introduces multiple degrees of freedom systems, finite element formulations and mode superposition techniques. Prerequisites: ENGR120, MATH 057, ENGR 019 with a "C-" or better.

MECH 140. Engineering Design/Senior Project I. 4 Units.

This course discusses methods of initiating, planning, conceptualizing, and configuring engineering designs. The student uses these methods to develop an engineering design for a product or process that involves mechanical engineering. Product realization methods, project management, materials selection, manufacturing for designers, guided iteration, communication skills, economics, ethics, liability, and safety issues are put into practice through class activities.

MECH 141. Engineering Design/Senior Project II. 4 Units.

The student completes the design phase of their project. Guided iteration and optimization are used to complete the detailed design of a product or process involving mechanical engineering. Manufacturing and rapid prototyping are used to complete the fabrication of a product or process. Failure modes and effects analysis, safety, and liability are considered. Regular oral and written progress reports are required along with final comprehensive oral and written reports.

MECH 150. Heat Transfer. 4 Units.

Students study heat transfer by conduction in one, two and three dimensions in transient and steady state and heat transfer in extended surfaces. Topics include solutions by numerical methods, convection in external and internal flow, free convection, and radiation. Prerequisites: ENGR 122, MATH 057, with a "C-" or better.

MECH 151. Applied Heat Transfer. 3 Units.

Applications and extensions of the topics in MECH 150. Multimode heat transfer; heat exchangers. Heat transfer with phase change. Prerequisites: Completion of all Fundamental Skills and MECH 150 with a "C-" or better.

MECH 155. Solar Energy Engineering. 3 Units.

This course introduces students to solar energy, sun-earth geometry, radiation measurement, insulation on surfaces, principles of solar collectors, applications such as space heating and solar ovens, and photovoltaics. Laboratory experiments are included. Prerequisites: Completion of all Fundamental Skills and ENGR 122 with a "C-" or better.

MECH 157. Thermodynamics II. 4 Units.

Students examine the thermodynamics of cycles for power and refrigeration. Other topics include the thermodynamics of gas mixtures, chemical reactions, chemical equilibrium, combustion, fuels, and processes involving air and water mixtures relating to heating, cooling, and ventilating for human comfort. The course includes experimental activities and written laboratory reports.

MECH 158. Air Conditioning. 3 Units.

Students are introduced to air conditioning purpose, terminology and typical systems. Students study the analysis and design of air conditioning as applied to residential and small commercial buildings, and they learn the codes and standards applicable to this field. Prerequisites: Completion of all Fundamental Skills; ENGR 122 with a "C-" or better.

MECH 160. Fluid Dynamics. 3 Units.

Students study equations of continuity, energy, and momentum as applied to fluid flow. Topics include one dimensional compressible flow, and the introduction to more advanced topics, such as turbomachinery, viscous flow and potential flow. Prerequisites: Completion of all Fundamental Skills; CIVL 130 and ENGR 122 with a "C-" or better.

MECH 175. Systems Analysis and Control. 4 Units.

Students study dynamic analysis and control of systems composed of mechanical, electrical, hydraulic and thermal components. Students use of system modeling and simulation techniques to predict transient and steady state response, lumped parameter approximations and linearization. Students also use feedback to enhance system performance and stability and they study design of linear control systems in the time and frequency domains. Prerequisites: Completion of all Fundamental Skills; ECPE 041, ECPE 041L, MECH 129 with a "C-" or better.

MECH 178. Finite Element Methods. 3 Units.

This course introduces the finite element method for engineering problems. Topics include matrix formulation of finite element models for problems in solid mechanics, heat transfer and fluid flow as well as solution of finite element equilibrium equations. Students study the development of computer algorithms and applications that use commercial finite element computer programs. Some familiarity with matrix methods is desirable. Prerequisites: Completion of all Fundamental Skills; ENGR 121 and ENGR 122 with a "C-" or better. Prerequisite, may be taken concurrently: CIVL 130 with a "C-" or better.

MECH 191. Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty members knowledgeable in the particular field of study. Permission of department chairperson and faculty members involved.

MECH 197. Undergraduate Research. 2-4 Units.

This course includes applied or basic research in mechanical engineering under faculty supervision. Projects may be experimental, mathematical or computational in nature. Permission of faculty supervisor and department chairperson. Student must be in good academic standing.

MECH 200. Computer Aided Manufacturing. 3 Units.

Develop students' competence and self-confidence as mechanical engineers. Computer aided design, analysis and manufacturing are emphasized. Course subject depends on active learning via several major design-and-build projects. Lecture focuses on the underlying theory of parametric 3-D solid modeling and representation, transformation techniques, machining strategy, and CNC manufacturing technology. Prerequisites: ENGR 121, MECH 100 with a "C" or better, Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

MECH 202. Polymer and Composite Materials. 3 Units.

Fundamental characteristics of polymers, fibers, and polymer-based composite materials are studied. Advanced mechanics of materials are used to develop tools to predict the mechanical behavior of composite laminates. Experimental and analytical methods for characterizing the mechanical and thermal behavior of polymers are studied, and laboratory-based experiences are used to enhance the learning process. Design methods for using these advanced materials in engineering applications are discussed. Prerequisites: ENGR 045, ENGR 121 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

MECH 204. Advanced Mechatronics. 3 Units.

Students study the design of mechatronic systems that integrate mechanical, electrical, and control systems engineering. Laboratories form the core of the course. They cover topics such as mechanism design, motors and sensors, interfacing and programming microprocessors, mechanical prototyping, and creativity in the design process. Project topics vary from year to year. Prerequisites: MECH 104 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

MECH 262. Combustion. 3 Units.

This course introduces students to combustion processes and systems. Students study the conservation equations for reacting flows, chemical kinetics, conserved scalars, premixed flames, diffusion flames and droplet burning. Primary applications studied are internal combustion engines and gas turbine combustors. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and ENGR 122 with a "C" or better or permission of instructor.

MECH 291. Graduate Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

MECH 293. Special Topics. 1-4 Units.

Special courses are organized and offered from time to time to meet the needs or interests of a group of students. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

MECH 297. Graduate Research. 1-4 Units.

Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor. Permission of faculty supervisor and department chair.

MECH 299. Thesis. 1-6 Units.

Minimum of six units is required for Thesis Option students. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and permission of research advisor.

Master of Science in Computer Science

Degrees Offered

Master of Science in Computer Science

The Master of Science in Computer Science (MSCS) is designed to strengthen students' technical, analytical, and professional breadth and depth. Students learn techniques and best practices of professional research, develop habits of independent thinking, and establish the intellectual foundations for achieving excellence in the field of computer science.

Graduates of the MSCS program in the School of Engineering and Computer Science should exhibit the following program learning outcomes:

1. Employ problem-solving, design, and research skills necessary to operate in the interdisciplinary field of computer science.
2. Engage in intellectual inquiry and learn to address new challenges in computer science.

Admission Criteria

Prospective students with earned bachelor's degrees must submit the following materials to the Research and Graduate Studies Office at the University of the Pacific. A completed application includes:

1. The Graduate School application form.
2. Two (2) letters of reference.
3. Transcripts from the institution where the BS degree was granted.
4. A personal statement on professional goals and objectives.
5. Official scores on the GRE General Examination.
6. A 3.0/4.0 GPA overall in the undergraduate program in the last 60 units of undergraduate study. Applicants with a GPA of 2.65 or higher, but less than 3.0, will be considered on an individual basis.
7. For students whose first language is not English, Test of English as a Foreign Language (TOEFL or IELTS) is required. The minimum score for admission is 80 for TOEFL iBT and 6.5 for IELTS. The minimum score for teaching assistants is 90 for TOEFL iBT or 7.0 for IELTS.

Accelerated Five Year Blended Program

The accelerated five-year Blended Program provides an excellent opportunity for students to begin their graduate work while they complete their undergraduate degree requirements. Students can pursue the accelerated Blended Program that allows them to complete their bachelors and master's degree in as little as five years. This five-year period may include some summer sessions and/or advanced placement units that were earned prior to starting at Pacific.

Students would begin by enrolling in an undergraduate program in the Pacific SOECS. Following acceptance into the Blended Program during their junior or senior years, students may begin taking graduate level courses to blend the bachelors and master's degrees together. The two degrees are awarded on the same date.

Blended Program Admission Criteria

School of Engineering and Computer Science undergraduates who maintain a minimum institutional GPA of 3.0 and a major GPA of 3.0 upon reaching junior or senior status may be considered for admission to the Blended Program. Once admitted they may begin taking graduate level courses. Students who choose to withdraw from the program prior to

completing all the requirements may be awarded the Bachelor of Science degree alone, contingent upon having completed all of the respective program requirements, which may include the co-op experience.

Graduates in the MSCS program will be assessed on the following specific competencies. These are the competencies that a successful graduate of the program will be expected to have achieved at the time of graduation:

- Program Learning Objective 1: Employ problem-solving, design, and research skills necessary to operate in the interdisciplinary field of computer science.
- Program Learning Objective 2: Engage in intellectual inquiry and learn to address new challenges in computer science.

Master of Science in Computer Science

To earn the Master of Science in Computer Science degree students must complete a minimum of 30 units with a Pacific cumulative grade point average of 3.0, in addition to the 120 units required for a BS degree. COMP 141, COMP 147, COMP 157, ECPE 170, and COMP 173 may be taken to satisfy requirements for both the BS and MSCS degrees, however the units for these courses may only be applied to the 120 units for the BS degree. Credit for COMP 141, COMP 147, COMP 157, and ECPE 170 or COMP 173 must be earned to satisfy the requirements for the MSCS degree, but the units for these courses may not be applied towards the 30 units required to complete the MSCS degree.

Academic Policies for Master of Science in Computer Science

I. Engineering and Computer Science Prerequisite Requirement

All course prerequisites in the MS in Computer Science program must be passed with a grade of C or higher.

II. Courses Taken Pass/No Credit

All courses that count toward the MS in Computer Science must be taken for a letter grade.

III. Graduate Independent Studies

Students who have an interest in a subject not offered as a regular course and who, by their overall performance at Pacific, have proven their ability to do independent work, may consider enrolling in a graduate independent study. The qualified student should initiate discussions with his/her advisor and with a professor who is knowledgeable in the subject. If both parties are in agreement, the student must complete the Individualized Study Form and submit it to the instructor and Office of the Registrar prior to the last day to add (see University Academic Calendar). Students on academic probation are not permitted to enroll in independent study courses in any department of the University. The following School of Engineering and Computer Science policies apply:

1. The course(s) may not be substituted for a regularly scheduled course unless approved by the department.
2. If the course is to be used as an elective, approval by the student's advisor and the department chairperson is required.
3. All courses must be taken for a letter grade; the pass/no credit option is not allowed for independent study courses.
4. Each course may be taken for one (1), two (2), three (3), or four (4) units. The unit value for the course is established between the

student and the professor responsible for the course. The student's advisor should be informed of this decision.

IV. Course Substitutions

A maximum of six units of approved advanced undergraduate courses (100 level) can count towards the 30 units required for the MS in Computer Science.

Undergraduate Core Courses (may be satisfied through courses taken for a BS degree)

COMP 141	Programming Languages	4
COMP 147	Computing Theory	4
COMP 157	Design and Analysis of Algorithms	4

Select one of the following:

ECPE 170	Computer Systems and Networks	
COMP 173	Operating Systems	

Required Graduate Course

ENGR 201	Techniques in Research	3
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Graduate Computer Science Electives 12

Twelve units of COMP courses at the 200 level

Computational Electives 6

Six units of COMP, ECPE, or MATH courses at the 100 or 200 level *

Graduate Electives 9

Nine units of courses at the 200 or 300 level

* COMP 141, COMP 147, COMP 157, COMP 173, ECPE 170, MATH 161, MATH 162, and MATH 166 may not count as Computational Electives.

Computer Science Courses

COMP 127. Web Applications. 4 Units.

The World-Wide Web consists of client-server applications operating over the Internet. This course introduces the skills and techniques for designing and developing web applications. Topics include: client-server architectures, web servers and web browsers, server-side programming, client-side programming, form processing, state management and multimedia. Prerequisites: Completion of all Fundamental Skills and COMP 053 with a "C-" or better or permission of instructor. (Fall, even years).

COMP 129. Software Engineering. 4 Units.

Students gain practical experience in dealing with medium to large scale software systems. Students learn how current analysis and design methodologies are used to develop the abstractions necessary to understand large systems. Students also learn how such methodologies and abstractions are used to communicate with coworkers and clients about the analysis and design. Because communication is an essential skill in large system development, students are expected to produce documents and presentations of professional quality and depth. Prerequisites: Completion of all Fundamental Skills and COMP 055 with a "C-" or better. (Spring, every year).

COMP 135. Human-Computer Interface Design. 3 Units.

Human-Computer Interface (HCI) Design focuses on the relationship between humans and computers or other physical devices. This course helps students develop an understanding of the common problems in designing these interfaces and presents a set of design techniques to ensure that designs are both useful and useable. Prerequisite: Completion of all Fundamental Skills. Junior standing. (Spring, every year).

COMP 137. Parallel Computing. 3 Units.

Parallel computing is a science which solves a large problem by giving small parts of the problem to many computers to solve and then combining the solutions for the parts into a solution for the problem. This course introduces architectures and implementation techniques to support parallel computation. Students are expected to design and implement an original parallel application as a term project. Prerequisite: Completion of all Fundamental Skills and COMP 053 with a "C-" or better. Corequisite: ECPE 170. (Spring, every year).

COMP 141. Programming Languages. 4 Units.

Topics in evaluation, design, and development of programming languages. Topics include type systems, variables and scope, functions, parameter passing, data hiding and abstractions, recursion, memory allocation, grammars and parsing, compiler architecture, programming paradigms, and comparison of programming languages and environments. Prerequisites: Completion of Fundamental Skills and COMP 053 with a "C-" or better.

COMP 147. Computing Theory. 4 Units.

Students study automata, formal languages and computability. Topics include finite state automata, regular languages, pushdown automata, context-free languages, Turing machines; decidability, reducibility, and time complexity that includes NP-completeness and intractability. Prerequisites: Completion of all Fundamental Skills; COMP 047 or ECPE 071 or MATH 074 with a "C-" or better.

COMP 151. Artificial Intelligence. 3 Units.

Students study fundamental concepts, techniques and tools used in Artificial Intelligence. Topics include knowledge representation, search techniques, machine learning and problem solving strategies. Also listed as ECPE 151. Prerequisites: Completion of all Fundamental Skills and COMP 053 with a "C-" or better. (Fall, odd years).

COMP 153. Computer Graphics. 3 Units.

An introduction to two and three dimensional computer graphics. Basic representations and mathematical concepts, object modeling, viewing, lighting and shading. Programming using OpenGL and other computer graphics applications. Also listed as ECPE 153. Prerequisites: Completion of all Fundamental Skills and COMP 053 with a "C-" or better. (Fall, even years).

COMP 155. Computer Simulation. 4 Units.

This course explores digital simulation, in which a model of a system is executed on a computer. The course focuses on modeling methodologies, mathematical techniques for implementing models, and statistical techniques for analyzing the results of simulations. Students develop simulations using both simulation development toolkits and general-purpose programming languages. Also listed as EMGT 155. Prerequisites: Completion of all Fundamental Skills; MATH 037 or MATH 039; MATH 045 or MATH 051, COMP 051 or ENGR 019 with a "C-" or better. (Fall, even years).

COMP 157. Design and Analysis of Algorithms. 4 Units.

Topics for this course include complexity analysis, algorithms for searching, sorting, pattern matching, combinatorial problems, optimization problems, backtracking, algorithms related to number theory, graph algorithms, and the limitations of algorithm power. Prerequisites: Completion of all Fundamental Skills; COMP 047 or MATH 074; COMP 053; MATH 045 or MATH 051 with a "C-" or better.

COMP 159. Computer Game Technologies. 4 Units.

This course surveys the technologies and processes used for modern video game development. Course topics include software engineering, media creation and management, hardware interfaces, user interaction, 3D mathematics and common algorithms and data structures to support graphics, physics and artificial intelligence. Prerequisite: Completion of all Fundamental Skills and COMP 055 with a "C-" or better. (Fall, odd years).

COMP 162. Data Analytics Programming. 4 Units.

This course develops programming skills for computational data analysis. The course emphasizes programming for statistical analysis, machine learning and predictive modeling. Other topics include programming packages for handling, preparation, and manipulation of data, as well as visualization tools for exploration and presentation of data and results. The course emphasizes hands-on data and analysis using a variety of real-world data sets and analytical objectives. Prerequisites: Completion of all Fundamental Skills; COMP 051 or COMP 061.

COMP 163. Database Management Systems. 4 Units.

A database management system (DBMS) is a computer application designed for the efficient and effective storage, access and update of large volumes of data. This course looks at such systems from two perspectives. The user-center perspective focuses on how a DBMS is used to build support for a data intensive application. This perspective includes examination of common data models, query languages and design techniques. The system implementation perspective focuses on the policies, algorithms and data structures used to design and implement a DBMS. Prerequisites: Completion of all Fundamental Skills and COMP 053 with a "C-" or better. Corequisite: COMP 047 or MATH 074. (Spring, every year).

COMP 173. Operating Systems. 4 Units.

Students are introduced to the fundamental concepts of modern operating systems. Topics include an overview of the computer hardware that supports the operating system, process management, threads, and CPU scheduling. Students also study process synchronization that uses primitive and high-level languages, virtual memory management, file systems, system protection, and distributed systems. Prerequisites: Completion of all Fundamental Skills; COMP 053 and ECPE 170 with a "C-" or better or permission of instructor.

COMP 175. System Administration and Security. 3 Units.

Students are introduced to an operating system from an administrator's standpoint. Topics include installation with the proper allocation of disk resources, maintaining the operating system and various subsystems, security issues that include server hardening, host firewalls and network security issues. Students also study account administration in a networked environment, change management and intrusion detection. Prerequisites: Completion of all fundamental skills and familiarity with console-based operating systems commands. Junior standing. (Fall, every year).

COMP 177. Computer Networking. 4 Units.

Topics examined in this course include computer networks and the internet, LAN and WAN architectures, and packet switched networks and routing. Students learn about the 7-layer OSI model and internet protocol stack, socket programming and client/server systems, wireless and security. The course includes a laboratory. Also listed as ECPE 177. Prerequisites: Completion of all Fundamental Skills; COMP 053 and ECPE 170 with a "C-" or better. Junior or Senior standing. (Fall, every year).

COMP 178. Computer Network Security. 3 Units.

This course is an examination of the pervasive security threats related to the Internet, data communications and networking. Topics include TCP/IP protocols, authentication, encryption, malware, cybercrime, and social engineering. Emphasis is on computer and network attack methods, their detection, prevention and analysis, and the integration of the tools and techniques employed in this effort. Includes lab. Prerequisites: Completion of all Fundamental Skills and ECPE 170 or COMP 175 with a "C-" or better. (Spring, every year).

COMP 187. Internship in Computer Science. 1-4 Units.

This internship course offers cooperative employment in a professional computer science environment. The internship requires satisfactory completion of the work assignment and written reports. Prerequisites: Completion of all Fundamental Skills; COMP 055 and ENGR 025 with a "C-" or better. Grading is Pass/No Credit only.

COMP 191. Independent Study. 1-4 Units.

Students create student-initiated projects that cover topics not available in regularly scheduled courses. A written proposal that outlines the project and norms for evaluation must be approved by the department chairperson.

COMP 195. CS Senior Project. 4 Units.

In this course, students synthesize their cumulative computer science knowledge through the development of a computer application. Students will establish design objectives and criteria, analyze solution alternatives and evaluate design performance. Students will then implement, test and evaluate the system. Results will include analysis and design documents, the implemented system, test reports and a presentation and demonstration of the project. Prerequisites: Completion of all Fundamental Skills, Senior Standing, COMP 055 with a "C-" or better.

COMP 197. Undergraduate Research. 1-4 Units.

Students conduct supervised research that contributes to current active topics in Computer Science. Topics may be selected by the student, related to faculty research, or provided by industrial sponsors. Permission of Undergraduate Research Coordinator.

COMP 227. Web Development. 3 Units.

This course is about the principles and techniques for designing and developing web applications. Topics include web application design, client-side web programming, and server-side web programming. Students are expected to read online resources and apply techniques to develop a website from scratch. Prerequisites: COMP 141 with a "C" or better and graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 229. Advanced Software Engineering. 3 Units.

Students gain practical experience in dealing with existing software systems. Students learn how existing software engineering practices are used to develop the abstractions necessary to understand and work with such systems. Students also learn how such methodologies and abstractions are used to communicate in a distributed environment with coworkers and clients surrounding the ideation, analysis, design and maintenance of systems. Because communication is an essential skill in large system development, students are expected to produce documents and presentations of professional quality and depth that can function in a remote working environment. Prerequisites: COMP 141 and COMP 157 with a "C" or better and graduate students in the School of Engineering and Computer Science or instructor approval.

COMP 235. Interaction Design. 3 Units.

Interaction Design focuses on the relationship between humans and the use of interactive software applications and other physical devices. This course helps students develop an understanding of the common problems in designing interfaces for apps and devices and presents design and evaluation techniques to ensure that products are both useful and usable.

COMP 241. Programming Language Semantics. 3 Units.

This course studies the foundations of programming languages by exploring the static and dynamic language semantics from a theoretical perspective. Formal techniques are used to specify programming language semantics and the associated provable guarantees that these specifications provide. Prerequisites: COMP 141 and COMP 147 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 251. Machine Learning. 3 Units.

This course introduces concepts of machine learning and statistical pattern recognition at the graduate level. The course covers topics such as linear and logistic regression, classification, clustering, model validation, support vector machines, neural networks, and decision trees. Data wrangling methods and dimensionality reduction are also examined. Prerequisites: COMP 157 with a "C" or better and graduate students in the School of Engineering and Computer Science or instructor approval.

COMP 252. Natural Language Processing. 3 Units.

This course is an introduction to the topic of natural language processing (NLP) from a computational perspective. The course covers both formal and statistical approaches to NLP. Coursework includes programming, analysis and literature review assignments. Topics include: n-gram models, part-of-speech tagging, hidden Markov models, parsing, semantics, information extraction, question answering, dialogue agents and machine translation. Prerequisites: COMP 147, COMP 157 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 253. Virtual Reality. 3 Units.

This course provides an overview of the field of virtual reality (VR). Topics include stereoscopic display, force feedback and haptic simulation, viewer tracking, virtual worlds, 3D user interface issues, augmented reality, and contemporary applications of VR in entertainment, teaching and training. Students gain practical experience designing and evaluating a virtual reality application. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science.

COMP 254. Advanced Graphics Programming. 3 Units.

This course provides a survey of advanced topics in computer graphics. Students will complete several Web-based 3D graphics programming projects, and explore a contemporary research topic related to computer graphics. Prerequisites: COMP 141, COMP 157, and ENGR 201 with a "C" or better and graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 257. Advanced Algorithms. 3 Units.

This course will cover the fundamentals of algorithm design. We will discuss some basic paradigms for reasoning about algorithms and their asymptotic complexity and survey many of the techniques that apply broadly in the design of efficient algorithms. Prerequisites: COMP 157 with a "C" or better and graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 258. Design/Assess of Serious Games. 3 Units.

This course develops the skills and techniques required for the creation of serious games, which are games that have an additional purpose beyond entertainment. Topics include understanding and evaluating the current landscape of serious games, undergoing the research to design a serious game, and then assessing the games created to see if they fulfill their goals as a serious game. This course is intended to prepare students to design, develop and assess multi-purpose software. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 259. Character Animation. 3 Units.

Investigation of algorithmic and data-driven techniques for directing the motion of computer generated characters, with a focus on human-like motion. Coursework will include analysis of published research, programming assignments and an original research project/investigation. Prerequisite: Graduate students in the School of Engineering and Computer Science or permission of the instructor.

COMP 261. Data Science. 3 Units.

This course is about the principles and methods for handling big data. Topics include data sources, data products, data analysis, and data visualization. Students are expected to read technical papers and apply techniques to solve real-world big data problems. Prerequisite: COMP 157 or EMGT 162 with a "C" or better and graduate students in the School of Engineering and Computer Science or instructor approval.

COMP 270. Secure Software Systems. 3 Units.

In this course, students will study best practices for secure software development. Topics will include secure software design, secure coding, and security testing and auditing. Students will learn how cryptographic algorithms work and applications of cryptography in secure software design. Students will write and analyze code that demonstrates specific security development techniques. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and COMP 157 with a "C" or better.

COMP 271. Vulnerabilities. 3 Units.

In this course, students will systematically study the fundamental principles of computer system security. Students will learn to identify vulnerabilities in computer systems and mitigate them. The course takes a practical approach to information security by focusing on real-world examples and hands-on lab activities. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science, and ECPE 170 or COMP 173 with a "C" or better.

COMP 272. Software Reverse Engineering. 3 Units.

The objective of this course is to familiarize students with the practice of reverse engineering programs where the source code is unavailable. By this process, students can discover the specification for a given software program, thereby understanding its operation as well as any data it uses or communication protocols it employs. This knowledge is valuable for identifying and neutralizing malware on a system or discovering software vulnerabilities and patching them during the course of a security audit. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science, and COMP 173 or ECPE 170 with a "C" or better.

COMP 274. Reliable Software Design. 3 Units.

With the technological advancements, critical systems (e.g., in the aerospace industry, healthcare industry, etc.) are being deployed and used in a widespread fashion. This trend, along with the increasing complexity of such systems, necessitate their software components to provide guaranteed reliability and assurance. This course introduces a mathematical foundation for rigorous analysis of computer programs by exploring the logical underpinnings and the tools that are used to reason about program correctness in order to develop high quality and robust software. In this course, students engage in developing programs that formally define system constructs, specifying the properties of interest, and proving the satisfaction of those properties in the system. Prerequisites: COMP 141 and COMP 147 with a "C" or better and graduate or blended students in the School of Engineering and Computer Science or instructor approval.

COMP 277. Advanced Computer Networking. 3 Units.

The modern Internet is a communications system of global scale and high complexity. In this course, students will study the technological underpinnings that enable modern network communication, including routing, network, and application-layer protocols. Wired, wireless, and cellular networks will be examined. The course will include a laboratory, with emphasis placed on determining the current state of a network through network mapping, traffic analysis, and protocol analysis. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science, and COMP 177 or ECPE 177 with a "C" or better.

COMP 278. Cyber Defense and Offense. 3 Units.

This course offers a comprehensive study of the principles and practices of computer system security including operating system security, network security, software security, and web security. Students will learn common threats and vulnerabilities, along with basic principles and techniques when designing a secure system. Hands-on labs will help students gain an understanding on how to think like an adversary, how modern cyber-attacks and defenses work in practice, and how to assess threats and protection mechanisms. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science, and ECPE 170 or COMP 173 with a "C" or better.

COMP 291. Graduate Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

COMP 293. Special Topics. 1-4 Units.

Special courses are organized and offered from time to time to meet the needs or interests of a group of students. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

COMP 297. Graduate Research. 1-4 Units.

Applied or basic research in engineering or computer science under faculty supervision. Approval by the faculty supervisor and the department chairperson is required. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

COMP 297D. Graduate Research. 1-4 Units.**COMP 297E. Graduate Research. 1-4 Units.****COMP 297F. Graduate Research. 1-4 Units.****COMP 297G. Graduate Research. 1-4 Units.****COMP 299. Thesis. 1-6 Units.**

Minimum of six units is required for Thesis Option students. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and permission of the research advisor.

Electrical Computer Engr Courses

ECPE 121. Digital Signal Processing. 4 Units.

Students analyze discrete-time signals and systems using z transforms and Fourier transforms, the fast Fourier transform and its applications, digital filters and their applications and implementation of DSP algorithms using Matlab and Simulink. Prerequisites: ECPE 041 and MATH 057 with a "C-" or better.

ECPE 124. Digital Image Processing. 4 Units.

This course is the analysis and design of algorithms in digital image processing. Topics include: image formation, file format, pixel-based processing, object recognition, filtering and edge detection, image transforms, segmentation, stereo-vision, and motion tracking. Prerequisites: COMP 053, ECPE 121 with a "C-" or better. Prerequisite that may be taken concurrently: ECPE 121.

ECPE 127. Random Signals. 3 Units.

This course is an introduction to probability and statistics in engineering applications. Students will become familiar with discrete and continuous random variables and their probability models. Topics include counting methods, reliability problems, probability mass functions (PMF), probability density functions (PDF), cumulative distribution functions (CDF), conditional PDF's, expected value and variance, joint and marginal PDF's and CDF's, functions of two random variables, sampling distributions, population parameter estimation, hypothesis testing using statistical software. Prerequisites: Completion of all Fundamental Skills, MATH 055 with a "C-" or better.

ECPE 131. Electronics. 3 Units.

This course introduces students to semiconductor physics. Topics include modeling, analysis, and simulation of analog and digital circuits containing diodes, bipolar junction transistors, and MOSFETs. Other topics include analysis and design of single stage amplifiers, frequency response of amplifiers, gain, bandwidth, DC biasing, and small signal analysis of amplifiers. Prerequisites: Completion of all Fundamental Skills; ECPE 041, ECPE 041L, ECPE 071, ECPE 071L, MATH 055, PHYS 055, with a "C-" or better; AP CHEM with score of 4 or higher, or IB CHEM Higher Level with score of 5 or higher, one year of high school chemistry with a "B-" or better, appropriate score on the Pacific Diagnostic Chemistry test or CHEM 023 with a "C-" or better. Corequisite: ECPE 131L. Prerequisite that may be taken concurrently: ECPE 071, ECPE 071L.

ECPE 131L. Electronics Lab. 1 Unit.

Students examine the use of standard electronic test equipment and simulation tools to analyze, design, and test electronic circuits. Emphasis on analog circuits. Prerequisites: Completion of all Fundamental Skills. Corequisite: ECPE 131.

ECPE 133. Solid State Devices. 4 Units.

This course introduces concepts related to the crystal structure of semiconductors and electronic, optical, and magnetic properties of semiconductors. Dynamics of carriers under equilibrium and non-equilibrium conditions are presented as a frame work for understanding the behavior of a number of devices including Metal-Oxide-Semiconductor (MOS) and Hetero-junction Bipolar (HBT) devices. On such a background, the course builds an understanding of the latest advances in the field. This course is cross listed with EPHY 133 and PHYS 170. Prerequisite: PHYS 055 with a "C-" or better. Prerequisite that may be taken concurrently: MATH 057 with a "C-" or better.

ECPE 135. Power Electronics. 4 Units.

Switch-Mode DC-DC converters, Feedback control of converters, Rectifiers and power factor correction circuits, switch mode DC power supplies, applications to motor control and renewable energy integration to the grid. Includes laboratory. Prerequisites: Completion of all Fundamental Skills; ECPE 131 and ECPE 131L with a "C-" or better. Prerequisite may be taken concurrently: ECPE 121 with a "C-" or better.

ECPE 136. VLSI Design. 4 Units.

Students examine issues in VLSI design. Topics include logic families, sizing, timing models, fabrication, layout, high speed and low power design tradeoffs, circuit simulation and device modeling. Prerequisites: Completion of all Fundamental Skills; ECPE 071, ECPE 071L, ECPE 131, ECPE 131L with a "C-" or better. (Spring odd years).

ECPE 141. Advanced Circuits. 4 Units.

Analysis and design of circuits in the continuous time domain. Topics include: frequency response, Laplace transforms, Fourier transforms, stability and feedback. Applications include high-order filter design and controls. Prerequisites: ECPE 041, ECPE 041L, and MATH 057 with a "C-" or better.

ECPE 144. Applied Electromagnetics. 4 Units.

The purpose of this course is for students to gain an understanding of transmission lines and field theory as it applies to communication circuits and systems. Electromagnetic wave propagation, reflection, and transmission through common materials are examined. This course is cross listed with EPHY 144. Prerequisites: Completion of all Fundamental Skills; PHYS 055, MATH 057, with a "C-" or better.

ECPE 155. Autonomous Robotics. 4 Units.

This course is an overview of the design of autonomous robotics. Students study architectures for robot organization and control, configurations of fixed and mobile robots, sensors and actuators. Students also study the design of algorithms and knowledge representations. Prerequisites: Completion of all Fundamental Skills; COMP 053 and ECPE 172 with a "C-" or better or permission of instructor.

ECPE 161. Automatic Control Systems. 4 Units.

Students study component and system transfer functions, open and closed loop response; stability criteria; applications to engineering systems. this course include a laboratory. Prerequisites: Completion of all Fundamental Skills; Prerequisite that may be taken concurrently: ECPE 121 or ECPE 141.

ECPE 162. Communication Systems. 4 Units.

Students examine signal characterization in time and frequency domains. Topics include baseband communication, pulse code modulation, multiplexing, complex envelope representation of bandpass signals. AM, FM, and digital modulations. Students also examine applications to radio, television, telephone, and cellular phone systems. A laboratory is included. Prerequisites: Completion of all Fundamental Skills and ECPE 121 with a "C-" or better. (Spring).

ECPE 163. Energy Conversion. 4 Units.

Students study three phase power systems. Topics include magnetic circuits, transformers, rotating machines: DC, induction, and synchronous machines as well as equivalent circuits and characteristic curves of transformers and rotating machines, renewable energy sources and technologies. the course includes a laboratory. Prerequisites: Completion of all Fundamental Skills; ECPE 041 and ECPE 041L; PHYS 055 with a "C-" or better.

ECPE 165. Power System Analysis. 3 Units.

Students study electrical power generation and transmission, Three-phase systems, power system component models, per-unit system and single line diagrams, power flow analysis. Prerequisites: Completion of all Fundamental Skills and ECPE 041 with a "C-" or better. Junior standing.

ECPE 170. Computer Systems and Networks. 4 Units.

This course is a comprehensive and holistic examination of the modern computing environment. Students gain an understanding of the various hardware and software components that enable computers and networks to process information and execute applications. Students learn to apply this knowledge in the development of efficient and robust software applications. Prerequisites: Completion of all Fundamental Skills; ECPE 071, COMP 053 with a "C-" or better.

ECPE 172. Microcontrollers. 4 Units.

Students study the design and implementation of digital monitoring and control systems that use micro-controllers. Topics include hardware and software development, interfacing input and output devices, assembly and C programming as well as representative applications. The course includes a laboratory. Prerequisites: Completion of all Fundamental Skills; COMP 051, ECPE 071, and ECPE 071L with a "C-" or better.

ECPE 173. Computer Organization and Arch. 3 Units.

The objective of this course is to give students an understanding of how a complete modern computer system operates. Students learn about design of control, datapath and arithmetic-logic units. Other topics include pipelining, memory hierarchy and assembly language programming. Prerequisites: Completion of all Fundamental Skills; ECPE 170; ECPE 172 or ECPE 174 with a "C-" or better.

ECPE 174. Advanced Digital Design. 4 Units.

Students learn how to analysis, design, and implement synchronous state machines using programmable logic devices. Topics include CAD-based simulation and development that use schematic capture and hardware description languages, and representative applications. The course includes a laboratory. Prerequisites: Completion of all Fundamental Skills; ECPE 071 and ECPE 071L with a "C-" or better.

ECPE 177. Computer Networking. 4 Units.

Students study computer networks and the Internet. Topics include LAN and WAN architectures, packet switched networks and routing, the 7-layer OSI model and Internet protocol stack, socket programming and client/server systems as well as wireless security. The course includes a laboratory. Also listed as COMP 177. Prerequisites: Completion of all Fundamental Skills; COMP 053 and ECPE 170 with a "C-" or better. Junior or Senior standing.

ECPE 178. Computer Network Security. 3 Units.

This course is an examination of the pervasive security threats related to the Internet, data communications and networking. Topics include TCP/IP protocols, authentication, encryption, malware, cybercrime, and social engineering. Emphasis is on computer and network attack methods, their detection, prevention and analysis, and the integration of the tools and techniques employed in this effort. Includes lab. Prerequisites: Completion of all Fundamental Skills and ECPE 170 or COMP 175 with a "C-" or better.

ECPE 191. Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty members knowledgeable in the particular field of study. Permission of department chairperson and faculty members involved.

ECPE 195. Senior Project I. 2 Units.

This first semester capstone design course instructs students in the application of design processes and interdisciplinary teamwork. Student teams select a project and develop requirements, test, and design documents. Projects incorporate consideration of engineering standards and realistic constraints such as economics, the environment, sustainability, manufacturability, or safety. Components are evaluated and selected. Feasibility is analyzed through prototyping or simulation and results are presented via oral and written reports. This course is cross listed with EPHY 195. Prerequisites: Completion of all Fundamental Skills; ECPE 131 and ECPE 131L; ECPE 121, ECPE 141, ECPE 172 or ECPE 174 with a "C-" or better.

ECPE 196. Senior Project II. 2 Units.

This second-semester capstone design course, interdisciplinary teams complete the design of their projects. Full implementation is completed, including iteration, optimization, and refinement; justifications for design decisions are analyzed. Testing is performed and results are evaluated to demonstrate satisfaction of specifications. Final oral and written reports, complete documentation, and a project demonstration are required. This course is cross listed with EPHY 196. Prerequisites: Completion of all Fundamental Skills; ECPE 195 with a "C-" or better.

ECPE 197. Undergraduate Research. 1-4 Units.

This course offers applied or basic research in electrical and/or computer engineering under faculty supervision. Permission of faculty supervisor and department chair. The student must be in good academic standing.

ECPE 225. Digital Signal Processing with Applications. 3 Units.

Topics include discrete time signals, systems, spectral analysis (DTFT), the Discrete Fourier Transform and the Fast Fourier Transform algorithm, decimation and interpolation, multi-rate signal processing, and filtering random signals. Additional course content is speech processing, speech models and characteristics, short time Fourier analysis, linear predictive coding. Image processing: 2D signals and systems, image coding, image enhancement is also addressed. Prerequisites: ECPE 121 with a "C" or better or equivalent and Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

ECPE 226. Computational Intelligence. 3 Units.

Computational intelligence is broadly defined as the concepts, models, and algorithms inspired by intelligent biological systems. Students will apply computational intelligence paradigms and techniques to real world data sets and optimization problems. Topics include types of learning, theory of generalization, linear and logistic regression, non-linear transformation, fundamentals of neural networks, evolutionary computation and optimization, fuzzy set theory and fuzzy logic, and other current topics in computational intelligence. Familiarity with basics in linear algebra, probability, and analysis of algorithms recommended. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science.

ECPE 233. Quantum and Nano Devices. 3 Units.

Students study advanced topics related to recent development of the emerging field of nanoelectronics where the feature lengths of the electron devices are of the order of several nanometers. They also study transport phenomenon in nano-structures that use a quantum atomistic transport approach. Topics include: quantum confined effects, nanofabrication, quantum wells, quantum wires, quantum dots, and quantum optoelectronic devices. The purpose of this course is to prepare the framework for analyzing, modeling, and designing of these non-scale electron devices. Prerequisites: familiarity with MATLAB, light familiarity with physics of semiconductor devices, light exposure to quantum physics, ability to solve second order differential equations, and an exposure to complex analysis, Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

ECPE 251. High-Performance Computing. 3 Units.

This course investigates modern HPC systems and architectures including multiprocessor clusters, General-Purpose Graphical Processing Units (GP-GPUs), and Xeon Phi co-processors. Students develop effective parallel programs by applying parallel programming principles, parallelism models, and communication models. Topics include: taxonomy of parallel machines, supercomputer topology, shared memory systems, OpenMP, distributed systems, message passing interface, CPU architecture, compute unified device architecture, HPC performance modeling. Prerequisite: Graduate or blended student in the School of Engineering and Computer Science and ECPE 170 with a "C" or better.

ECPE 253. Advanced Computer Graphics. 3 Units.

Students study advanced topics in computer-generated graphics such as procedural modeling, surface simplification, shaders, texture synthesis and mapping, volume rendering, ray tracing, photon mapping, image-based rendering techniques, non-photorealistic rendering, 3D hardware/GPUs and animation. Course includes programming projects and presentation of research topics. Prerequisites: COMP 153 or ECPE 153 with a "C" or better, C programming experience (C++ or Java is acceptable, but students are expected to program in C), Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

ECPE 255. Robotics. 3 Units.

This course explores high-level issues of autonomous robotics. The course will focus on theory, design, and implementation of making intelligent and autonomous robots. The course will examine these topics from the perspective of individual robots, swarm robots, and multi-agent robots. Students will learn both theory and practice through simulations and work on robot platforms. Prerequisites: ECPE 170 or ECPE 172 or MECH 104 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science.

ECPE 259. Sensor Networks for Engineering Systems. 3 Units.

This course introduces sensor networks for infrastructure systems from sensor selection, system design, implementation, acquisition, and analysis. Examination of application across multiple engineering disciplines. Project based components with laboratory. Prerequisites: ECPE 131, ECPE 121; or ENGR 019, ENGR 121; or COMP 055, COMP 157 with a "C" or better; Graduate or blended students in the School of Engineering and Computer Science; or permission of instructor.

ECPE 263. Recent Topics in Renewable Energy. 3 Units.

Recent Trends in global warming and the rising cost of energy has resulted in significant interest in renewable energy sources that include solar thermal, solar photovoltaics, hydrogen fuel cells, biomass, geothermal, wind, hydraulic, and hybrid technologies. This course is a survey of these energy sources and covers the theory, economic feasibility, current level of technological development, renewability, abundance, and environmental impacts of the renewable sources and compares them to the non-renewable sources which include oil, gas, coal, nuclear, and other current energy technologies. The emphasis is given to research in these fields by the students' term papers and projects. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

ECPE 276. Cloud Computing. 3 Units.

Cloud computing has become mainstream in the field of information technology, providing highly scalable computing resources for applications with no up-front capital investment and operating costs proportional to the actual use. Students will study the technological underpinnings that enable modern cloud computing, including virtualization technology, datacenter networks, programming models, and middleware systems. This course will provide a survey of current research focused on improving the performance, security, fault-tolerance, and energy efficiency of cloud computing systems. Further, students will utilize these cloud computing technologies as application programmers to construct distributed large-scale data processing systems. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and ECPE 170 with a "C" or better.

ECPE 291. Graduate Independent Study. 1-4 Units.

Special individual projects are undertaken under the direction of one or more faculty. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of instructor.

ECPE 293. Special Topics. 1-4 Units.

Special courses are organized and offered from time to time to meet the needs or interests of a group of students. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

ECPE 297. Graduate Research. 1-4 Units.**ECPE 297D. Graduate Research. 1-4 Units.****ECPE 299. Thesis. 1-6 Units.**

Minimum of six units is required for Thesis Option students. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science and permission of the research advisor.

School of Health Sciences

<https://www.pacific.edu/academics/schools-and-colleges/school-of-health-sciences.html>

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Nicoleta Bugnariu, Dean

Programs Offered

Master of Science in Athletic Training (Stockton)

Master of Science in Clinical Nutrition (Sacramento)

Master of Science in Nursing (Sacramento)

Entry Level Master of Science in Nursing (Sacramento)

Master of Physician Assistant Studies (Sacramento)

Master of Social Work (Sacramento)

Master of Science in Speech-Language Pathology (Stockton)

Doctor of Audiology (San Francisco)

Doctor of Occupational Therapy (Sacramento)

Doctor of Physical Therapy (Stockton)

Purpose

Advance the lifelong health and wellness of our diverse communities.

Mission

Empower, engage, and prepare all graduates to be transformative professionals and socially-conscious leaders through education, reflection, scholarship, and service.

Vision

An innovative school and an impactful community partner, nationally recognized as a leader in transformative healthcare education.

Values

Our shared values are at the heart of who we are and represent what we do best. Our values guide and shape our success by defining the essence of education at Pacific. This affirmed set of values builds pride and a sense of belonging, and it supports development and engagement through a shared sense of purpose and identity. These values foster a culture that recognizes and rewards the talents and commitment of individuals in our School and cultivate an environment of innovation, inclusiveness and respect. As an integral part of the University of the Pacific, the School of Health Sciences commits to the following PACIFIC VALUES:

Student-centered: Our students come first in everything we do. Student impact is an important consideration in every decision we make.

Academic Excellence: We have high academic standards focusing on teaching, scholarship, and experiential learning. We invest in individualized attention and long-term relationships that build human potential.

Community Engagement: We are committed to learning from and enhancing our communities. We share a sense of purpose and pride in what we accomplish together.

Diversity & Inclusion: We respect all individuals and embrace the richness our diversity brings to us as an educational community. We recognize and honor differences, creativity, and bridging what is distinct from creating an inclusive environment.

Integrity & Accountability: We demonstrate integrity in our actions. We strive always to do the right thing and hold ourselves and others accountable.

Respect & Civility: We demonstrate genuine concern for others and a willingness to engage in open discourse. We seek to establish common ground and ways to connect with others. We honor and value one another.

Athletic Training

Thomas "TK" Koesterer, Department Chair

Program Offered

Master of Science in Athletic Training

Program Overview

University of the Pacific's Professional Master of Science in Athletic Training program is a full-time cohort (team) model that consist of 60 units taught over two years, beginning with a summer session that starts mid-June. Students learn through extensive hand-on experiences with athletes/patients, and excellent classroom and laboratory instruction from experienced, caring faculty. The program prepares students to become highly qualified health care professionals who collaborate with physicians and other healthcare professionals.

Mission

The mission of the Athletic Training Program is to empower students to become disciplined, self-reliant, responsible leaders in their careers and communities by providing superior hands-on, student centered learning experiences and professional education in athletic training.

Goals

The goals of the Athletic Training Program are to graduate students:

1. Who integrate knowledge and skills into safe competent clinical practice
2. Who communicate effectively
3. With Clinical Reasoning skills
4. Who incorporate Evidence-based Practice
5. With Professional Leadership skills

Accreditation

University of the Pacific's Master of Science in Athletic Training (MSAT) program is accredited by the Commission on Accreditation of Athletic Training Education (CAATE). The program has received the maximum initial accreditation of five years through the 2024-2025 academic year.

Admission Requirements

- ATCAS Application
- Bachelor's degree with a 3.0 or higher GPA
 - A GPA below 3.0 may be considered on a conditional basis
- Official transcripts sent to ATCAS
- Completed prerequisite courses
 - No grade below a "C" and a 3.0 or higher overall GPA for prerequisite coursework
 - A prerequisite GPA below 3.0 may be considered on a conditional basis
 - Resume
- Personal Statement
- Two letters of recommendation
 - One letter from the athletic trainer who supervised the majority of observation hours
 - One letter from a college or university instructor or employer
- Verification of 100 Clinical Observation Hours by a Certified Athletic Trainer

- Current CPR/AED for the profession rescuer certification that meets Emergency Cardiac Care (ECC) standards as determined by the Board of Certification (BOC)
- Personal interviews
- Signed Technical Standards for Admission
- Signed Confidentiality Statement

Required Prerequisite Courses

The equivalent of one undergraduate 3.0 unit course is required for each of the courses listed below.

- Biology
- Anatomy
- Physiology
- Chemistry
- Physics
- Kinesiology or Biomechanics
- Exercise Physiology
- Psychology

Preferred Prerequisite Courses

The following courses will strengthen a candidate's application, but are not required for admission.

- Athletic Training
- Health
- Wellness
- Nutrition
- Statistics
- Research methods
- Medical terminology

Additional Information

- Applicants are required to complete all remaining prerequisite course work prior to beginning MSAT coursework.
- Immunization requirements for Athletic Training located at Immunization Compliance (<http://www.pacific.edu/immunizationcompliance/>)
- Applicants are required to read and sign the Technical Standards
- Applicants are required to read and sign the Confidentiality Statement
- Personal interview will take place on the Stockton campus. Students are required to attend the interview in person. In some extraordinary cases (e.g. extreme distance), an alternate type of interview may be conducted.
- Background check is required prior to beginning the MSAT program.
- The program does not accept transfer credits for athletic training courses.
- *Policy on Nondiscrimination: University of the Pacific does not discriminate on the basis, of race, gender, sexual orientation, national origin, ancestry, color, religion, religious creed, age, marital status, cancer-related or genetic-related medical condition, disability, citizenship status, military service status, and any other status protected by law.*

Additional Program Cost

Prospective students should be aware that, upon acceptance into the MSAT program, there would be additional expenses associated with the program. These expenses include:

- Liability insurance may be purchased for \$35 or less at HSP0 (<http://landing.hps0.com/hps0-ancillary-landing/>)

refID=WW2GWi&utm_source=yahoo&utm_medium=cpc&utm_campaign=80 Students may be able to rejoin the program at a later date if allowed by HPSO-HPSO-PPC_Brand&utm_term=hspo) or proliability (http:// program policy and approved by the program chair/director.

- Professional membership in the NATA is required
- Professional attire is required for clinical experiences. Student may be supplied or have the opportunity to purchase AT attire from clinical sites.
- Students are required to demonstrate ongoing certification in CPR that meets ECC standards throughout their time in the MSAT program.
- CPR mask and small medical kit and equipment
- Travel to clinical sites. Students are required to have their own reliable transportation to clinical sites, which may be up to approximately 1-hour travel time.
- Program fee of \$500 per year for course supplies and equipment

Additional expenses may arise, if faculty and staff determine the need or accreditation standards dictate.

Integrate knowledge and skills

Within the five(5) practice domains, perform tasks critical for the safe and competent practice as an entry level Athletic Trainer

- Injury and Illness Prevention and Wellness Promotion
- Examination, Assessment and Diagnosis
- Immediate and Emergency Care
- Therapeutic Intervention
 - Healthcare Administration and Professional Responsibility

Communicate Effectively

Incorporate appropriate and effective written and oral communication when interacting with athletes/patients, family members, coaches, administrators, other healthcare professionals, consumers, payors, policy makers and/or employers

Clinical Reasoning

Assimilate information to form a diagnosis and plan of care, with on-going assessment to adjust care, while reflecting and learning from the process

Evidence-based Practice

Integrate the best available research evidence with clinical expertise, patient values and circumstances to make decisions about the care of individual athletes/patients

Professional Leadership

Establish effective interactions and collaborations with athletic trainers, physicians, and other health care professionals in a manner that optimizes the quality of individual athlete/patient care and appropriately promotes the profession of athletic training.

Master of Science in Athletic Training

The MSAT program is a full-time program with a cohort based plan of study. Students are required to enroll full-time and must advance through a pre-determined curriculum in sequence with their cohort. Students are required to successfully pass each course in a given semester in order to advance to the subsequent semester with their cohort and progress in the program. Students who do not pass a course, or who withdraw from a course, will not be able to progress with their cohort in the program.

Students must complete 60 semester units; are required to earn a “B-” or better to successfully pass each course, and maintain a Pacific cumulative grade point average (GPA) of 3.0 or better to earn the Master of Science in Athletic Training. Any grade less than “B-” will not count towards the degree.

Year 1

Summer		
ATTR 200	Anatomical Kinesiology for Athletic Training	3
ATTR 201	Techniques in Athletic Training I	1
ATTR 211	Lower Extremity: Examination and Clinical Diagnosis I	3
ATTR 220	Therapeutic Modalities	1
Fall		
ATTR 202	Techniques in Athletic Training II	1
ATTR 212	Upper Extremity, Spine & Thorax: Examination and Clinical Diagnosis II	3
ATTR 221	Lower Extremity: Therapeutic Intervention I	3
ATTR 231	Evidence Based Practice in Athletic Training	3
ATTR 241	Exercise Physiology in Athletic Training	2
ATTR 287A	Clinical Experience I	1
Spring		
ATTR 203	Techniques in Athletic Training III	1
ATTR 213	Head and Face: Examination, Clinical Diagnosis and Therapeutic Intervention	3
ATTR 222	Upper Extremity, Spine and Thorax: Therapeutic Intervention II	3
ATTR 232	Research Methods in Athletic Training	3
ATTR 251	Acute Care and Emergency Management	3
ATTR 287B	Clinical Experience II	1
Year 2		
Summer		
ATTR 252	Healthcare Administration in Athletic Training	3
ATTR 292A	Pre-Season Clinical Internship	2
Fall		
ATTR 214	General Medical Conditions in Athletic Training	3
ATTR 242	Strength and Conditioning in Athletic Training	2
ATTR 261	Pharmacology in Athletic Training	2
ATTR 292B	Clinical Internship	4
Spring		
ATTR 215	Psychosocial Intervention and Referral in Athletic Training	3
ATTR 262	Nutrition in Athletic Training	2
ATTR 270	Athletic Training Capstone	3
ATTR 287C	Clinical Experience III	1

Athletic Training Courses

ATTR 200. Anatomical Kinesiology for Athletic Training. 3 Units. Functional anatomical study of human movement with emphasis on clinical injury evaluation, performance enhancement and injury prevention. Prerequisite: Admission to the MSAT program or permission of the instructor and Program Director.

ATTR 201. Techniques in Athletic Training I. 1 Unit.

Foundational Profession knowledge and skills in Athletic Training with emphasis on regulations and the applications of prophylactic and resistive taping techniques. Prerequisite: Admission to the MSAT program or permission of the instructor and Program Director.

ATTR 202. Techniques in Athletic Training II. 1 Unit.

Foundational professional knowledge and skill in Athletic Training with emphasis on the roles of the athletic trainer as a member of the healthcare system and the application of compressive wraps. Prerequisite: ATTR 201 with a "B-" or better or permission of the instructor and Program Director.

ATTR 203. Techniques in Athletic Training III. 1 Unit.

Foundational professional knowledge and skills in Athletic Training with emphasis on communication, documentation, bracing and padding. Prerequisites: ATTR 202 with a "B-" or better or permission of the instructor and Program Director.

ATTR 211. Lower Extremity: Examination and Clinical Diagnosis I. 3 Units.

Perform an examination to formulate a clinical diagnosis of lower extremity conditions commonly seen in athletic training practice to include obtaining a history, identification of comorbidities, assessment of function, and selection and use of test and measure to assess the athlete/patient's clinical presentation. Prerequisite: Admission to MSAT program or permission of the instructor and Program Director.

ATTR 212. Upper Extremity, Spine & Thorax: Examination and Clinical Diagnosis II. 3 Units.

Perform an examination to formulate a clinical diagnosis of upper extremity, spine and thoracic conditions commonly seen in athletic training practice to include obtaining a history, identification of comorbidities, assessment of function, and selection and use of test and measures to assess the athlete/patient's clinical presentation. Prerequisite: ATTR 211 with a "B-" or better or permission of the instructor and Program Director.

ATTR 213. Head and Face: Examination, Clinical Diagnosis and Therapeutic Intervention. 3 Units.

Perform an examination to formulate a clinical diagnosis of head and face conditions commonly seen in athletic training practice to include obtaining a history, identification of comorbidities, assessment of function, selection and use of test and measures to assess the athlete's/patient's clinical presentation, and select and incorporate appropriate therapeutic interventions. Prerequisite: ATTR 212 with a "B-" or better or permission of the instructor and Program Director.

ATTR 214. General Medical Conditions in Athletic Training. 3 Units.

Perform an examination to formulate a clinical diagnosis and plan of care for general medical conditions commonly seen in the practice of athletic training. Prerequisite: ATTR 213 with a "B-" or better or permission of the instructor and Program Director.

ATTR 215. Psychosocial Intervention and Referral in Athletic Training. 3 Units.

This course examines psychosocial aspects of athletic training and social determinants of health including strategies for identifying, intervening, making referrals and providing support. Prerequisite: ATTR 214 with a "B-" or better or permission of the instructor and Program Director.

ATTR 220. Therapeutic Modalities. 1 Unit.

Safely and competently, apply modalities used in athletic training practice with comprehension of the physiology effects, indications, contra indications, and proper maintenance. Prerequisite: Admission to the MSAT program or permission of the instructor and Program Director.

ATTR 221. Lower Extremity: Therapeutic Intervention I. 3 Units.

Theory and application to select and incorporate therapeutic interventions that address an athlete/patient's identified impairment, activity limitations, and participation restrictions of the lower extremity. Prerequisites: ATTR 211 and ATTR 220 with "B-" or better or permission of the instructor and Program Director.

ATTR 222. Upper Extremity, Spine and Thorax: Therapeutic Intervention II. 3 Units.

Theory and application to select and incorporate therapeutic interventions that address an athlete/patient's identified impairment, activity limitations, and participation restrictions of the upper extremity, spine and thorax. Prerequisites: ATTR 212 and ATTR 221 with a "B-" or better or permission of the instructor and Program Director.

ATTR 231. Evidence Based Practice in Athletic Training. 3 Units.

Introduction to Evidence-based practice concepts and critical thinking in Athletic Training. Prerequisite: Admission to the MSAT program or permission of the instructor and Program Director.

ATTR 232. Research Methods in Athletic Training. 3 Units.

Current research methods and evidence-based practice in athletic training. Prerequisites: ATTR 231 with a "B-" or better or permission of the instructor and Program Director.

ATTR 241. Exercise Physiology in Athletic Training. 2 Units.

This course covers physiological response to exercise under normal and pathological conditions, and the mechanism responsible for those changes. Prerequisite: Admission to the MSAT program or permission of the instructor and Program Director.

ATTR 242. Strength and Conditioning in Athletic Training. 2 Units.

Develop, implement, supervise and assess wellness and fitness programs designed to mitigate the risk of long-term health conditions, reduce the risk of injury and/or maximize sports performance using biometrics and physiological monitoring systems. Prerequisite: ATTR 241 with a "B-" or better or permission of the instructor and Program Director.

ATTR 251. Acute Care and Emergency Management. 3 Units.

Evaluate and manage athletes/patients with acute conditions in athletic training practice including triaging conditions that are life threatening or otherwise emergent. Prerequisite: ATTR 211 and ATTR 212 with a "B-" or better, or permission of the instructor and Program Director.

ATTR 252. Healthcare Administration in Athletic Training. 3 Units.

Management physical, human, and financial resources in the delivery of healthcare services related to Athletic Training. Prerequisites: Training. Prerequisite: ATTR 251 with a "B-" or better or permission of the instructor and Program Director.

ATTR 261. Pharmacology in Athletic Training. 2 Units.

Indications, contraindications, dosing, administration, interactions, adverse reactions and regulations of pharmacological agents related to the practice of athletic training and emergencies. Prerequisite: ATTR 241 with a "B-" or better, or permission of the instructor and Program Director.

ATTR 262. Nutrition in Athletic Training. 2 Units.

Current evidence-based recommendations for proper intake, sources of, and effect of micro- and macronutrient need related to activity, optimal performance, health and disease over a lifetime. Additional related topics include ergogenic aids, thermoregulation, food labels, body composition, weight control, disordered eating, tissue growth and repair, and making recommendations based on patient's lifestyle, activity level and their goals.

ATTR 270. Athletic Training Capstone. 3 Units.

Prepare students for the national certification examination, to transition to practice, for professional development, to contribute to the profession and to educate the public on health issues. Prerequisite: ATTR 287B with a "B-" or better or permission of the instructor and Program Director.

ATTR 287A. Clinical Experience I. 1 Unit.

Introductory clinical education experience provides a developmental progression of increasingly complex care experiences through direct contact with athletes/patients and guided supervision by a preceptor. Prerequisites: ATTR 200; ATTR 201; ATTR 211; ATTR 220 with a "B-" or better or permission of the instructor and Program Director.

ATTR 287B. Clinical Experience II. 1 Unit.

Intermediate clinical education experience continues the developmental progression of increasingly complex care experiences through direct contact with athletes/patients, while the preceptor's guided supervision progresses from interdependence toward independence based on the student's knowledge and skill, as well as the context of care. Prerequisite: ATTR 287A with a "B-" or better or permission of the instructor and Program Director.

ATTR 287C. Clinical Experience III. 1 Unit.

Advanced clinical education experience culminates the developmental progression of increasingly complex care experiences through direct contact with athletes/patients in a variety of settings, while the preceptor's supervision progresses to independence based on the student's knowledge and skills, as well as the context of care. Prerequisite: ATTR 292B with a "B-" or better or permission of the instructor and Program Director.

ATTR 292A. Pre-Season Clinical Internship. 2 Units.

Full-time, practice-intensive preseason clinical internship allows the student to experience the totality of care provided by athletic trainers. Prerequisite: ATTR 287B with a "B-" or better or permission of the instructor and Program Director.

ATTR 292B. Clinical Internship. 4 Units.

Full-time, practice-intensive clinical internship allows the student to experience the totality of care provided by athletic trainers. Prerequisite: ATTR 292A with a "B-" or better or permission of the instructor and Program Director.

Audiology

<http://www.pacific.edu/Academics/Schools-and-Colleges/Thomas-J-Long-School-of-Pharmacy-and-Health-Sciences/Academics/Speech-Language-Pathology-and-Audiology/Doctor-of-Audiology.html>
Gabiella Musacchia, Ph.D., Department Chair

Mission

The mission of the Department of Audiology is to prepare reflective audiologists for lifelong success by providing an excellent student-centered, experiential learning environment. Our students are mentored in developing professionalism, leadership, critical thinking skills, and a strong commitment to their profession and society. These efforts are assisted by the department's commitment to professional growth through clinical practice, scholarly activity, and service to the profession and the community. The program's curriculum is developed in accordance with state and national accreditation standards and guidelines to ensure that graduates provide exemplary professional practice throughout their careers.

The goal of the program is to prepare practice-ready audiologists for careers serving patients of all ages with hearing and balance disorders as identified in the Audiology Scope of Practice in a variety of work settings:

medical centers, physician's offices, private clinics, schools, and early intervention centers.

Program Offered

Doctor of Audiology

Admission Requirements

A Bachelor's degree in any major with a minimum 3.0 GPA in the last 60 units, acceptable GRE scores, and three letters of recommendation. Prerequisites from a non-Communication Sciences and Disorders undergraduate degree include three units or equivalent in Biological Sciences and Physical Sciences (e.g., General Biology, Physics or Human Anatomy & Physiology). Applications are accepted through The Centralized Application Service for Communication Science & Disorders Programs. Apply here: <https://csdcas.liaisoncas.org/>

Graduates of the Doctor of Audiology program will demonstrate: Humanistic Leadership

- Conceptualizes how to advance the community's hearing health, and integrates diverse perspectives on how to build access to hearing healthcare.

Evidence-based Practice

- Critically evaluate the quality of evidence from research and practice-based sources and uses these to educate about prevention, provide screening, and appropriate clinical treatment, including advanced diagnostic procedures.

Integrative Clinical Practice

Think critically and problem solve in the process of analyzing complex and diverse concepts, that require application of professional judgment

- Independently makes appropriate differential diagnoses that require the application of complex and diverse audiology concepts
- collaborates with other practitioners to critically evaluate diagnoses in the course of developing and implementing treatment plans that are appropriate to the diagnosis and the client's situation and concerns.

Professional Communication

- Communicates results of diagnostic assessments, and treatment options effectively, both orally and in writing, to patients and to other clinical providers.

Ethical Competence

- Articulates the bases for the ethical standards in the audiology profession, explains how ethical principles can be applied to resolving ethical challenges in practice, and consistently adheres to ethical standards in the practice of audiology.

Interpersonal Interaction

- Interacts effectively and respectfully with people from diverse backgrounds and cultures and works through differences with civility.

Doctor of Audiology

The Doctor of Audiology program is a full-time program with a cohort based plan of study. Students are required to enroll full-time and must advance through a pre-determined curriculum in sequence with their cohort. Students are required to successfully pass each course in a given semester in order to advance to the subsequent semester with their cohort and progress in the program. Students who do not pass a course, or who withdraw from a course, will not be able to progress with their cohort in the program. Students may be able to rejoin the program at a

later date if allowed by program policy and approved by the department chair.

Students must complete a minimum of 125 units with a Pacific cumulative grade point average of 3.0 in order to earn the doctor of audiology degree.

First Year

Semester 1		Units	
AUDI 301	Anatomy and Physiology of Hearing	3	
AUDI 303	Signals and Systems	3	
AUDI 305	Diagnostic Audiology I	3	
AUDI 306	Diagnostic Audiology Lab	1	
AUDI 307	Diagnostic Audiology II	3	
AUDI 315	Amplification I	3	
AUDI 316	Amplification Lab	1	
AUDI 385A	Audiology Practicum I	1	
AUDI 386A	Practicum Seminar I	1	

Term Units 19

Semester 2

AUDI 309	Diagnostic Electrophysiology I	3	
AUDI 310	Diagnostic Electrophysiology Lab	1	
AUDI 311	Pediatric Audiology	3	
AUDI 317	Amplification II	3	
AUDI 341	Psychoacoustics	3	
AUDI 345	Hearing Disorders	3	
AUDI 385B	Audiology Practicum II	1	
AUDI 386B	Practicum Seminar II	1	

Term Units 18

Semester 3

AUDI 331	Vestibular Assessment I	3	
AUDI 332	Vestibular Assessment Lab	1	
AUDI 338	Speech-Language Pathology for Audiologists	2	
AUDI 340	Deaf Culture and Communication Systems	1	
AUDI 343	Research Methods	3	
AUDI 367	Vestibular Assessment II	3	
AUDI 373	Professional Issues I	1	
AUDI 385C	Audiology Practicum III	1	

Term Units 15

Second Year

Semester 1

AUDI 319	Amplification III	3	
AUDI 321	Auditory Implants	3	
AUDI 325	Aural Rehabilitation	3	
AUDI 371	Counseling	3	
AUDI 383	Professional Issues II	1	
AUDI 370A	Internship I	3	

Term Units 16

Semester 2

AUDI 313	Central Auditory Processing - Diagnosis & Management	3	
AUDI 349	Industrial Audiology	3	
AUDI 358	Pharmacology and Ototoxicity for Audiologists	2	
AUDI 364	Diagnostic Electrophysiology II	2	
AUDI 368	Physical and Behavioral Health for Audiology	2	

AUDI 393	Professional Issues III	1
AUDI 370B	Internship II	3

Term Units 16

Semester 3

AUDI 347	Tinnitus Assessment and Treatment	3
AUDI 355	Practice Management	3
AUDI 362	Comprehensive Differential Diagnosis	2
AUDI 366	Advanced Topics in Research, Practice and Technology	2
AUDI 370C	Internship III	1

Term Units 11

Third Year

Semester 1

AUDI 388A	Externship I	9
AUDI 389A	Externship Seminar I	1

Term Units 10

Semester 2

AUDI 388B	Externship II	9
AUDI 389B	Externship Seminar II	1

Term Units 10

Semester 3

AUDI 388C	Externship III	9
AUDI 389C	Externship Seminar III	1

Term Units 10

Total Unit: 125

Audiology Courses

AUDI 301. Anatomy and Physiology of Hearing. 3 Units.

An in-depth course on the anatomy and physiology of the hearing mechanism primarily as it related to hearing. Prerequisites: Admission to the AuD program or permission of instructor.

AUDI 303. Signals and Systems. 3 Units.

Basics of signal processing for hearing aids and equipment that measure hearing. IEC/ANSI standards of performance for the instrumentation, calibration procedures, and compliance. Prerequisites: Admission to the AuD program or permission of instructor.

AUDI 305. Diagnostic Audiology I. 3 Units.

Foundation and orientation to audiological equipment and testing. Basic audiometric tests and underlying principles, case history and universal precautions. Prerequisites: Admission to the AuD program or permission of instructor.

AUDI 306. Diagnostic Audiology Lab. 1 Unit.

Foundation and orientation to audiological equipment and testing. Practical experience with a focus on basic audiometric and physiologic tests, case history and universal precautions. Prerequisites: Admission to the AuD program or permission of instructor.

AUDI 307. Diagnostic Audiology II. 3 Units.

Evaluation of middle ear function by using the principles of acoustic immittance. Principles underlying otoacoustic emissions. Implementation of tests and formulation of diagnosis based on test results. Prerequisites: Admission to the AuD program or permission of instructor.

AUDI 309. Diagnostic Electrophysiology I. 3 Units.

Diagnostic electrophysiological techniques, assessment of hearing using auditory evoked responses across all age ranges. Evidence-based best practices for determining threshold and neurophysiological integrity with the auditory brainstem response (ABR). Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 310. Diagnostic Electrophysiology Lab. 1 Unit.

Applied, hands-on training in Auditory Brainstem Response (ABR) techniques for the measurement and interpretation of Threshold Estimation and Neurodiagnostic protocols for adults and children. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 311. Pediatric Audiology. 3 Units.

Diagnostic assessment of children from ages 0-18. Embryology and hearing development and genetics of hearing loss. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 313. Central Auditory Processing - Diagnosis & Management. 3 Units.

This course provides overview of the central auditory nervous system with emphasis on the neuroanatomy, neurophysiology, and the central auditory disorders and their assessment and management. The course also provides detailed discussion of the theory, causes, diagnosis, management strategies for central auditory processing disorders, and differentiation diagnosis of cases with central auditory processing disorders.

AUDI 315. Amplification I. 3 Units.

This course provides theoretical and applied understanding of current technology in hearing aids, hearing aid components, compression, hearing aid acoustics, digital sound processing schemes, programming of hearing instruments, and electroacoustic analysis of the performance of hearing instruments. Prerequisites: Admission to the AuD program or permission of instructor.

AUDI 316. Amplification Lab. 1 Unit.

This course provides hands on practicum regarding hearing aid troubleshooting, taking ear impressions, modifying earmolds, fitting software manipulations, ANSI electroacoustic analysis, and real ear measurements. Prerequisites: Admission to the AuD program or permission of instructor.

AUDI 317. Amplification II. 3 Units.

This course provides detailed discussion of hearing aid candidacy; procedures for selecting, prescribing, and fitting hearing aids; patient counseling; follow up procedures; clinical procedures related to amplification; validation methods; and fine tuning of hearing aid features and digital processing schemes. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 319. Amplification III. 3 Units.

This course provides advanced application of knowledge and skills obtained in AUDI 315 and AUDI 317, and provides detailed discussion about hearing aid issues for special populations, evidence based practice in hearing aids, enhancing the amplification benefit in different situations using: bilateral advantage, wireless transmission, assistive listening devices, and counseling techniques. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 321. Auditory Implants. 3 Units.

This course covers a variety of auditory prosthetic devices with emphasis on cochlear implant technology. History, pediatric and adult candidacy, signal processing strategies and fitting protocols will be explored in detail. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 323. Pediatric Aural Rehabilitation. 3 Units.

This course is an overview of current management options for the (re)habilitation of children with hearing loss.

AUDI 325. Aural Rehabilitation. 3 Units.

Rehabilitation of children and adults with hearing loss. Current rehabilitation strategies and outcome measures that assess patients' success. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 327. Auditory Verbal Therapy. 3 Units.

Key principles and components of a successful auditory-verbal program along with procedural outlines to formulate a strategy to implement goals, including audiological monitoring, parent training and therapy components.

AUDI 331. Vestibular Assessment I. 3 Units.

Anatomy and physiology of the vestibular mechanism, diagnostic tests, case history, bedside evaluations, and ENG/VNG test battery. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 332. Vestibular Assessment Lab. 1 Unit.

Hands on training to implement tests of vestibular function including diagnostic tests, case history, bedside evaluations, and ENG/VNG test battery. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 333. Vestibular Treatment. 3 Units.

Didactic and hands on approach to management and treatment of vestibular disorders. Causes and pathophysiology of vestibular loss, treatment programs. Interdisciplinary approach to the patient management.

AUDI 335. Speech and Language Development. 3 Units.

Overview of the normal processes underlying speech and language development across the lifespan.

AUDI 338. Speech-Language Pathology for Audiologists. 2 Units.

Overview of the speech and language disorders, screening and identification of children at risk for speech and language disorders. Basic phonetics and transcription, basic speech and language screening protocols. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 340. Deaf Culture and Communication Systems. 1 Unit.

Introduction to Deaf Culture and American Sign Language (ASL), with emphasis on signs most useful to audiologists working clinically. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 341. Psychoacoustics. 3 Units.

Physical and psychological attributes related to sound in normal hearing and impaired ears. Classical psychophysical methods discussed, with an emphasis on their application to audiological testing.

AUDI 343. Research Methods. 3 Units.

Introduction to research methods used in audiology. Statistical analyses in descriptive and experimental research. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 345. Hearing Disorders. 3 Units.

Etiology, pathophysiology, diagnosis and treatment of diseases of the outer, middle, inner ear and the central auditory system. Syndromic and non-syndromic genetic disorders along with their impact on the development and function of the auditory system. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 347. Tinnitus Assessment and Treatment. 3 Units.

Causes and pathophysiology of tinnitus. The various therapies, pharmacological agents, and management of tinnitus. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 349. Industrial Audiology. 3 Units.

Introduction to the basic principles of sound and its measurement, including Damage Risk Criteria and its application to noise-induced hearing loss will be addressed, as well as components of hearing conservation programs in a variety of settings and evaluation of their effectiveness in the prevention of hearing. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 355. Practice Management. 3 Units.

This course provides detailed discussion of operational and business management of audiology clinical practice, business plan development, startup and long term business plans, and legal considerations. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 358. Pharmacology and Ototoxicity for Audiologists. 2 Units.

Basic concepts and terminology of pharmacology will be explored, including pharmacokinetics, pharmacodynamics and ototoxic drugs. Medications that may contribute to or treat audiological and vestibular diagnoses will be discussed. Legislation and regulatory issues related to drug clinical trials and the Food and Drug Administration (FDA) will be reviewed. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 362. Comprehensive Differential Diagnosis. 2 Units.

Comprehensive review of use of auditory and vestibular test batteries in different diagnosis and management of patients. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 364. Diagnostic Electrophysiology II. 2 Units.

Advance assessments of hearing using auditory evoked responses across all age ranges. Evidence based review of the measurement and interpretation of the neurophysiological and electrophysiological methods of auditory function assessment in adults and children. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 366. Advanced Topics in Research, Practice and Technology. 2 Units.

Advance topics of current trends in the field of audiology. Seminars in contemporary research topics, developments in evidence-based practice, and advancement in technology in the industry. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 367. Vestibular Assessment II. 3 Units.

Anatomy and physiology of the vestibular mechanism, case history, bedside evaluations, advanced diagnostic tests, introduction to vestibular rehabilitation, and advanced topics in vestibular research. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 368. Physical and Behavioral Health for Audiology. 2 Units.

Referral and management of common health conditions including physical and behavioral health. Implications for hearing loss and clinical management. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 370A. Internship I. 3 Units.

Clinical Experience in an off-campus placement to develop beginning audiology skills and provide patient care. Minimum of 200 hours of clinical experience required. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 370B. Internship II. 3 Units.

Clinical Experience in an off-campus placement to develop intermediate audiology skills and provide patient care. Minimum of 200 hours of clinical experience required. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 370C. Internship III. 1 Unit.

Clinical Experience in an off-campus placement to develop intermediate audiology skills and provide patient care. Minimum of 100 hours of clinical experience required. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 371. Counseling. 3 Units.

This course provides an overview of the theory and practice of counseling, with a focus on diagnosis, rehabilitation and adjustment processes of patients and families. The course emphasizes patient-centered care, psychosocial effects of hearing loss, tinnitus and balance disorders, multicultural and multigenerational approaches of counseling. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 373. Professional Issues I. 1 Unit.

Current issues in the profession of audiology including audiology scope of practice, audiology employment opportunities, state licensure requirements to practice audiology, and professional certification options for audiologists. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 383. Professional Issues II. 1 Unit.

Course content will discuss current issues in the profession of audiology including audiology employment opportunities, state licensure requirements vs. professional certification options, ethical and legal issues for audiologists, and coding & billing. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 385A. Audiology Practicum I. 1 Unit.

Guided observations of a variety of audiological activities and preliminary structured participation as aide in diagnostic evaluations under the guidance of clinical supervisors. Students will accrue a minimum of 40 patient observations and/or contact hours. Prerequisites: Admission to the AuD program or permission of instructor. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 385B. Audiology Practicum II. 1 Unit.

Guided clinical experience of a variety of audiological activities in diagnostic evaluations and hearing aid fittings under the guidance of clinical supervisors. Students will accrue a minimum of 40 patient contact hours.

AUDI 385C. Audiology Practicum III. 1 Unit.

Guided clinical experience of a variety of audiological activities in diagnostic evaluations and hearing aid fittings under the guidance of clinical supervisors. Students will accrue a minimum of 40 patient contact hours. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 386A. Practicum Seminar I. 1 Unit.

Evidence-based approach, to advanced procedures and protocols for diagnostic testing, results, and recommendations. Prerequisites: Admission to the AuD program or permission of instructor.

AUDI 386B. Practicum Seminar II. 1 Unit.

Evidence-based approach, to advanced procedures and protocols for diagnostic testing, results, and recommendations. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 388A. Externship I. 9 Units.

Clinical Experience in an off-campus placement to develop advanced audiology skills and provide patient care. Minimum of 500 hours of clinical experience required. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 388B. Externship II. 9 Units.

Clinical Experience in an off-campus placement to develop advanced audiology skills and provide patient care. Minimum of 500 hours of clinical experience required. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 388C. Externship III. 9 Units.

Clinical Experience in an off-campus placement to develop advanced audiology skills and provide patient care. Minimum of 500 hours of clinical experience required. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 389A. Externship Seminar I. 1 Unit.

Utilizing an evidence-based approach, case presentations are made by students in a grand rounds format (presenting a particular patient's medical problems, diagnostic testing results and treatment effects) to other audiology students and faculty incorporating various clinical practices and evaluation and treatment protocols. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 389B. Externship Seminar II. 1 Unit.

Utilizing an evidence-based approach, case presentations are made by students in a grand rounds format (presenting a particular patient's medical problems, diagnostic testing results and treatment effects) to other audiology students and faculty incorporating various clinical practices and evaluation and treatment protocols. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 389C. Externship Seminar III. 1 Unit.

Utilizing an evidence-based approach, case presentations are made by students in a grand rounds format (presenting a particular patient's medical problems, diagnostic testing results and treatment effects) to other audiology students and faculty incorporating various clinical practices and evaluation and treatment protocols. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 391. Graduate Independent Study. 1-4 Units.**AUDI 393. Professional Issues III. 1 Unit.**

Course content will discuss current issues in the profession of audiology including audiology scope of practice, audiology externship preparation, state licensure requirements vs. professional certification options, ethical, cultural, and legal issues for audiologists. Prerequisites: Successful completion of all previous courses in the AUD course sequence or permission of instructor.

AUDI 397. Graduate Research. 1-6 Units.

Physical Therapy

<https://healthsciences.pacific.edu/healthsciences/programs/doctor-of-physical-therapy>

Phone: (209) 946-2886

Location: Rotunda; Thomas J. Long School of Pharmacy
Tamara L. Phelan, PT, EdD, Department Chair

Programs Offered

Doctor of Physical Therapy

Program Mission

The mission of Pacific's physical therapy program is to prepare lifelong learners who are skilled, reflective, autonomous practitioners. The program is committed to furthering the body of knowledge of physical therapy and providing leadership within the profession advocating for optimal health, wellness and performance for all members of society.

We accomplish this through a concise program of study emphasizing evidence-based reasoning and creative skills grounded in the basic and clinical sciences. Our academic program is enhanced by a wide variety of innovative clinical experiences and involvement in professional societies.

Program Philosophy

Physical therapists are experts in human movement and function who serve patients/clients at all points along the continuum between health and optimal physical function and disease in a wide variety of circumstances and settings. Physical therapists must be autonomous, highly skilled practitioners to meet the needs of their patients and the expectations of society. These skills are optimally developed in a doctoral level graduate educational program that includes learning experiences in the cognitive, affective and psychomotor domains and emphasizes the following:

Basic Sciences

Basic sciences are the foundation on which the theory and practice of physical therapy is based. Emphasis on basic sciences provides students with a solid framework in which to view established theory and practice of physical therapy in the educational setting, to evaluate new theory and practice as they move to the clinical setting, and to contribute to theory and practice of physical therapy in the future. Additionally, a solid foundation in basic sciences provides students with the tools needed for clinical reasoning based on evidence, and it provides a common language with which to communicate with other clinicians and scientists.

Professional Behavior

Professional behavior is an essential component of professional success and clinical excellence. Students enter physical therapy programs with a wide variety of past experiences. What constitutes appropriate professional behavior for a physical therapist may not be immediately obvious to all students; therefore professional behavior must be consciously included in the curriculum.

Clinical Experiences

Ongoing and progressive clinical exposure promotes accelerated learning and development of clinical competence and facilitates continued student engagement.

Integration of Clinical Relevance throughout the Curriculum

Integration of clinical relevance in all courses promotes efficient acquisition of clinical reasoning skills.

Student-Centered Learning

Student-Centered Learning promotes intellectual rigor, depth, and accountability for each individual student and fosters the development of the independent learner.

Excellence in Teaching

Excellence in teaching practices result in a deep and efficient learning experience for the student, promotes clinical and intellectual excellence, and fosters lifelong learning.

Conclusion

Commitment to a core curricular philosophy that involves an emphasis on basic sciences, professional behavior, clinical relevance in all courses, early and progressive clinical experiences, student centered learning, and excellence in teaching provides the foundation for an efficient and concise educational experience for students. The field of Physical Therapy and its practice is a dynamic and evolving profession. Following a rigorous and balanced 25 month professional program, graduates of Pacific's Doctor of Physical Therapy program are prepared to meet the needs of their patients and society and to develop their expertise through their commitment to lifelong learning.

Admission Requirements

For the most current information regarding the application process and requirements, please visit the web site: www.pacific.edu/dpt (<http://www.pacific.edu/dpt/>).

Learning Outcomes

1. Students will pass the National Physical Therapy Examination on the first attempt.
2. Students will demonstrate entry-level performance or greater on clinical internships.
3. Students will participate in service learning during the course of the didactic program.

The Doctor of Physical Therapy Degree

The entry level Doctor of Physical Therapy (DPT) degree is a highly structured 25-month course of study, consisting of six consecutive trimesters. Coursework includes foundational sciences (anatomy, physiology, pathophysiology), clinical sciences, management of professional life and practice, clinical applications, and substantive clinical practical experiences.

A major element of the program is the opportunity for students to be involved in meaningful professional clinical experiences under the supervision of carefully selected practitioners. Opportunities include acute care facilities, skilled nursing facilities and rehabilitation sites in California and throughout the US. All students must successfully complete the clinical internship requirements as an inherent part of the professional program.

Prerequisites to participation in the clinical internships are:

1. Satisfactory completion of all other required courses with a minimum GPA of 3.0 (in accordance with the Standards of Academic Success delineated in the Physical Therapy Student Handbook);
2. Advancement to degree candidacy; and
3. Permission of the department faculty.

To receive the Doctor of Physical Therapy degree, each student must demonstrate clinical competence as well as academic success.

Academic success means:

1. Maintenance of a cumulative GPA of at least 3.0.
2. No grade below a B- in any required course at the 300 level is counted toward the degree. An exception may be made if only one C+ is earned in one term, in which case other requirements must be met subsequently in order for the course to be counted toward the degree. (See the Academic Standards section in the Physical Therapy Student Handbook for more information.)

Clinical competence means:

1. The ability to evaluate individuals with movement dysfunction and identify problems appropriate for physical therapy intervention.
2. The ability to establish appropriate treatment goals and plans, including specific physical therapy procedures or modalities.
3. The ability to effectively apply the various physical therapy procedures and modalities.
4. The ability to relate effectively to clients, their families and other health care providers.

Assessment of these competencies is made by faculty before recommending the awarding of the degree.

Accreditation and Licensing

The Physical Therapy Program is accredited by the Commission on Accreditation in Physical Therapy Education of the American Physical Therapy Association. Successful completion of an accredited program qualifies the graduate to take the licensing examination. Admission to the program is highly competitive and limited to 36 openings each year.

Prerequisites

Prerequisites for admission to the program include the following:

1. Bachelor's degree with a major of student's choice.
2. Successful completion of the listed prerequisite courses.
 - a. Prerequisite courses must be completed with a grade of "C" or above.
 - b. Courses are taken on a graded basis; pass/fail courses are not acceptable.
 - c. Biological science, chemistry and physics courses must all include significant laboratory experiences. Prerequisite science courses must be taken within the last ten years.
 - d. Correspondence, on-line or extension coursework is not acceptable without approval from the Admissions Committee or Department Chair. All coursework must have defined objectives, course description, an objective grading system, and meet the content expectations of the prerequisite.
3. 50 physical therapy observation hours are required. A minimum 25 hours must be in an acute care in-hospital setting. (Please note: sub-acute and other non-acute care settings do not satisfy this requirement.) Applicants are encouraged to visit the American Physical Therapy Association website to review the definition of

acute care and descriptions of that setting: <http://www.apta.org/PTCareers/Overview/>.

4. GRE test scores must be less than 5 years old at the time of application.
5. A personal interview at the invitation of the Admissions Committee is required.

Prerequisite Coursework

General Biology

6 semester credits/9 quarter units

Two courses in biology:

- One general biology with lab.
- Any other course in biology (not botany) with or without lab.

Human Anatomy with lab

4 semester credits/5-6 quarter credits minimum.

Human Physiology with lab

4 semester credits/5-6 quarter credits minimum.

Note: A single semester course that combines human anatomy and physiology does not meet the anatomy and physiology requirements. However, a two-semester sequence of the combined subjects does meet these requirements.

General Chemistry with lab

8 semester credits/12 quarter credits minimum. A standard full-year course.

General Physics with lab

8 semester credits/12 quarter credits minimum. A standard full-year course. Calculus level physics is not required but is accepted.

Abnormal Psychology

3 semester credits/4 quarter credits minimum.

Statistics

3 semester credits/4 quarter credits minimum.

Exercise Physiology

3 semester credits/4 quarter credits minimum. Introduction to the study of human physiological responses and adaptations that results from muscular activity, including demonstration and measurement of basic physiological responses that occur with exercise.

Medical Terminology

1 semester credit/2 quarter credits minimum. A basic course in bioscientific terminology, analyzing the Latin and Greek elements in scientific English.

Prerequisite Coursework Notes

- All courses should be in the traditional classroom format (no online courses), except Medical Terminology.
- All courses should be for credit and taken on a graded basis with a 'letter' grade. 'Pass/Fail', 'Satisfactory/non-satisfactory' courses are not accepted.
- All courses must be completed with a grade "C" or above.
- It is recommended that all science courses be taken within 10 years of application.
- All prerequisite courses must be completed at a regionally accredited institution (details of accreditations requirements listed elsewhere).

- All courses must have defined course objectives, a course description and syllabus information (with instructor contact information) must be provided if requested by Admissions Committee.
- Advanced Placement courses are not accepted.

Doctor of Physical Therapy

The Physical Therapy program is a full-time program with a cohort-based plan of study. Students are required to enroll full-time and must advance through a pre-determined curriculum in sequence with their cohort. Students are required to successfully pass each course in a given semester in order to advance to the subsequent semester with their cohort and progress in the program. Students who do not pass a course, or who withdraw from a course, will not be able to progress with their cohort in the program. Students may be able to rejoin the program at a later date if allowed by program policy and approved by the program chair/director.

Students must complete a minimum of 106 units with a Pacific cumulative grade point average of 3.0 in order to earn the Doctor of Physical Therapy degree.

First Year

Fall		Units
PTHR 311	Gross Human Anatomy	6
PTHR 312	Exercise Physiology in Physical Therapy	2
PTHR 313	Clinical Kinesiology I	3
PTHR 314	Introduction to Physical Therapist Practice	1
PTHR 316	Physical Therapy Examination and Evaluation	4
PTHR 318	Physical Therapy Patient Care Skills	1
PTHR 319	Physical Agents	1

Term Units 18

Spring

PTHR 321	The Nervous System and Behavior	5
PTHR 323	Clinical Kinesiology II	3
PTHR 326	Therapeutic Exercise: Basic Theory and Application	4
PTHR 328	Research: Theory and Application	2
PTHR 329	Pathophysiology	4

Term Units 18

Summer

PTHR 332	Electrotherapy	1
PTHR 333	Analysis of Movement Through the Life Span	2
PTHR 334	Medical Conditions and Screening for Medical Disease	4
PTHR 335	Cardiovascular and Pulmonary Physical Therapy	4
PTHR 336	Full Time Integrated Clinical Education Experience	4
PTHR 339	Motor Learning and Motor Control	2
PTHR 398	Research Literature Review	1

Term Units 18

Second Year

Fall

PTHR 340	Integumentary and Lymphatic Physical Therapy	2
PTHR 342	Physical Therapy Leadership, Administration, and Management	1
PTHR 344	Neuromuscular Physical Therapy	5
PTHR 345	Advanced Clinical Problems I	1
PTHR 348	Industrial Physical Therapy	1
PTHR 347	Musculoskeletal Physical Therapy I	5
PTHR 351	Prosthetics and Orthotics	1

PTHR 381	Soft Tissue Mobilization and Taping	1
PTHR 353	Diagnostic Imaging for Physical Therapists	1
Term Units		18
Spring		
PTHR 343	Geriatric Physical Therapy	1
PTHR 352	Physical Therapy Management of Population Health	2
PTHR 354	Pediatric Physical Therapy	1
PTHR 355	Advanced Clinical Problems II	1
PTHR 356	Psychosocial Aspects of Illness and Disability	2
PTHR 357	Musculoskeletal Physical Therapy II	2
PTHR 358	Clinical Education and Early Career Development	1
PTHR 359	Full Time Clinical Education Experience I	8
Term Units		18
Summer		
PTHR 368	Full Time Clinical Education Experience II	8
PTHR 369	Full Time Clinical Education Experience III	10
Term Units		18
Total Unit: 108		

* and can be taken in the second year as 1 unit electives.

Physical Therapy Courses

PTHR 311. Gross Human Anatomy. 6 Units.

This course involves a detailed regional analysis of the structure of the human body that includes the lower extremity, upper extremity, head, neck and trunk, and thoracic, abdominal, and pelvic cavities. Functional correlates to the structures are also presented and discussed. The course has a lecture component as well as a cadaver dissection based laboratory/discussion component. Prerequisites: Admission to the DPT program or permission of instructor.

PTHR 312. Exercise Physiology in Physical Therapy. 2 Units.

This course is designed to give the physical therapy student a strong foundational knowledge of the physiological response to exercise under normal and pathological conditions, and the mechanisms responsible for those changes. Prerequisite: Admission into the DPT program or permission of instructor.

PTHR 313. Clinical Kinesiology I. 3 Units.

This course introduces students to the basic principles of kinesiology and biomechanics. It emphasizes the integration of basic science knowledge from multiple disciplines into an applied clinical approach to the study of human movement. Course content focuses on the basis of human movement from cells to systems, as well as normal and pathological movement of the lower extremity. Prerequisite: Admission into the DPT program or permission of instructor.

PTHR 314. Introduction to Physical Therapist Practice. 1 Unit.

This course introduces students to the principles and practice of physical therapy. Students explore the history and the role of the profession of physical therapy in the healthcare system and as a member of the healthcare team. Students begin to develop professional behaviors and communication skills required to function in that role. This course includes an introduction to the various practice areas of physical therapy through part-time integrated clinical education experience. Prerequisite: Admission into the DPT program or permission of instructor.

PTHR 316. Physical Therapy Examination and Evaluation. 4 Units.

This course provides an overview of basic examination procedures and clinical reasoning approaches used throughout the practice of physical therapy. Course content includes history-taking, vital signs, inspection, palpation, range of motion measurement, manual muscle testing, neurologic testing, selected special tests, and other functional tests. Prerequisite: Admission into the DPT program or permission of instructor.

PTHR 318. Physical Therapy Patient Care Skills. 1 Unit.

This course introduces the students to the basic principles and practice of patient care in physical therapy. Course content includes patient education, bed mobility and related techniques, transfers and body mechanics, gait devices, wheelchairs, documentation, and aseptic bandaging techniques. Prerequisite: Admission into the DPT program or permission of instructor.

PTHR 319. Physical Agents. 1 Unit.

This course enables the student to properly select and safely and competently apply the various physical agents used by physical therapists. Topics covered include physiological responses and indications, contraindications and precautions for each modality. Case studies are used to illustrate the principles of evaluation and treatment planning. Prerequisite: Admission into the DPT program or permission of instructor.

PTHR 321. The Nervous System and Behavior. 5 Units.

This course is designed to give the student an in-depth understanding to the structure and function of the nervous system, how it controls movement and behavior, and how deficits in the system affect movement and behavior. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 323. Clinical Kinesiology II. 3 Units.

This course is a continuation of PTHR 313 and extends the examination of normal and pathological human movement to the upper extremities, trunk and TMJ regions. Basic biomechanical and kinesiological principles are presented. The relationship of these principles to the clinical environment is stressed. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 326. Therapeutic Exercise: Basic Theory and Application. 4 Units.

This course provides an introduction to the theory and application of therapeutic exercise in physical therapist practice. Students gain an understanding of the physiological effects of training and de-training on the human body and develop the evaluative skills necessary to prescribe a therapeutic exercise plan. Students learn therapeutic exercise techniques for addressing strength, power, endurance, balance, stability, motor control and neuromuscular re-education in a variety of patient populations. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 328. Research: Theory and Application. 2 Units.

This course helps the student develop an understanding of the scientific method of inquiry, research design and methodologies, critical analysis of research articles, critical analysis of health science concepts and findings, and development of clinical research projects through application of the basic principles of the scientific method. This course provides the fundamental background to help students understand evidence-based practice in Physical Therapy. Prerequisites: Successful completion of all previous DPT courses or permission of instructor.

PTHR 329. Pathophysiology. 4 Units.

This course involves the detailed analysis of the structure, function and pathology of the organ systems of the body. Functional correlates to physical therapy care are included. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 332. Electrotherapy. 1 Unit.

This course enables the student to properly select and safely and competently apply various therapeutic electrical devices. Topics include physiological responses, indications, contraindications, and precautions for the use of these electrical devices. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 333. Analysis of Movement Through the Life Span. 2 Units.

This course focuses on the development and refinement of human movement from infancy to older adulthood. Students develop visual observation skills and handling techniques used to facilitate normal movement in various patient populations. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 334. Medical Conditions and Screening for Medical Disease. 4 Units.

This course focuses on the process of screening for medical referral in the practice of physical therapy. The students learn the major signs and symptoms and medical and pharmacologic management of various medical diseases and conditions. This course also covers the possible sources of referred pain from systemic diseases that may mimic or increase pain caused by neuromuscular or musculoskeletal pathology. The students learn through the use of patient/client interview and other tests and measurements to recognize signs and symptoms that may require referral to other practitioners. During this process, the student applies principles of professional communication to interactions with patients, physicians and other health care providers. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 335. Cardiovascular and Pulmonary Physical Therapy. 4 Units.

This course addresses physical therapy examination, evaluation of and interventions for the individual with cardiovascular and/or pulmonary disease. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 336. Full Time Integrated Clinical Education Experience. 4 Units.

This course consists of full-time clinical experience under the supervision of licensed physical therapists at specified facilities, with which the University maintains an affiliation agreement. Prerequisite: Successful completion of all previous DPT courses or permission of the instructor.

PTHR 339. Motor Learning and Motor Control. 2 Units.

This course focuses on current theories of motor learning and motor control. These theories will provide a foundation for clinical diagnosis of movement and postural control disorders as well as assessment and treatment interventions. Prerequisites: Successful completion of all previous DPT courses or permission of instructor.

PTHR 340. Integumentary and Lymphatic Physical Therapy. 2 Units.

This course teaches students the physical therapy management of integumentary and lymphatic conditions. Topics include the pathophysiology and clinical presentations of typical and atypical wound healing and lymphatic system function. Various treatment options to promote wound healing and lymphedema management are covered. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 342. Physical Therapy Leadership, Administration, and Management. 1 Unit.

This course provides an introduction to principles of leadership, business administration, and management in health care. These principles are specifically applied to physical therapy practice settings. Topics include interviewing and negotiating, business planning and budgeting, public relations, and billing and coding. Prerequisites: Successful completion of prior coursework in the DPT program or permission of the instructor.

PTHR 343. Geriatric Physical Therapy. 1 Unit.

This course focuses on physical therapy management of the geriatric patient population. Students gain an understanding of age related changes in biology, physiology, anatomy and function as well as psychological issues and pathological changes associated with aging. Students integrate this knowledge with previous coursework to identify orthopedic, neurological, cardiopulmonary, cardiovascular and integumentary treatment consideration for geriatric patients. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 344. Neuromuscular Physical Therapy. 5 Units.

This course focuses on examination, evaluation and intervention for patients and clients with neuromuscular dysfunction. This course emphasizes the establishment of a diagnosis by a physical therapist, identification of a realistic prognosis and selection of various intervention options based on best evidence. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 345. Advanced Clinical Problems I. 1 Unit.

This course facilitates the integration of knowledge from all prior course work using case studies and actual patient contacts to perform physical therapy examination, evaluation, and intervention. Case studies and patient contacts may include examples of patients/clients with orthopedic, neurological, integumentary, cardiopulmonary, and multiple systems disorders. Students perform all elements of patient care under faculty supervision. Prerequisites: Successful completion of all previous DPT courses or permission of instructor.

PTHR 347. Musculoskeletal Physical Therapy I. 5 Units.

This course integrates and expands the student's understanding of previous physical therapy coursework as it applies to the musculoskeletal setting, and introduces the student to manual therapy techniques. Students apply concepts from previous coursework to the examination, evaluation, and intervention of patient/clients in the musculoskeletal/orthopedic setting with a regional emphasis on the extremities. Additionally students develop basic competencies in manual therapy techniques for the extremities. Prerequisites: Successful completion of all previous DPT courses or permission of instructor.

PTHR 348. Industrial Physical Therapy. 1 Unit.

This course covers the physical therapist's roles in occupational health and wellness. Topics include prevention of injury and illness, regulatory compliance, job-based examination and evaluation, and rehabilitation programs that consider the functional requirements of various types of work. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 351. Prosthetics and Orthotics. 1 Unit.

This course provides the student with a basic understanding of the prescription, fitting and use of various orthotic and prosthetic devices. Biomechanical properties of normal and pathological gait for the user of lower extremity devices are discussed. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 352. Physical Therapy Management of Population Health. 2 Units.

This course emphasizes the physical therapy profession and the practice of physical therapy as it relates to promoting the health of populations. Special emphasis will include health policy, applied epidemiologic methods, population health program design, and evaluation, health communications, population health ethics, and professional advocacy. Prerequisites: Successful completion of prior coursework in the DPT program or permission of the instructor.

PTHR 353. Diagnostic Imaging for Physical Therapists. 1 Unit.

This course covers basic principles and interpretation of musculoskeletal diagnostic imaging modalities as they apply to the physical therapist. Indications, normal anatomy, and common findings on plain film x-rays, computed tomography, and magnetic resonance imaging are discussed with an emphasis on the integration of information from clinical imaging into clinical reasoning. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 354. Pediatric Physical Therapy. 1 Unit.

This course provides the student with a foundational understanding of issues and problems that affect the pediatric population addressed by the practice of physical therapy. Students are expected to incorporate knowledge of previous course work used in the evaluation and development of intervention strategies for patients in this population. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 355. Advanced Clinical Problems II. 1 Unit.

This course prepares students for physical therapist practice in inpatient/acute care settings using case studies and simulation scenarios. Students will integrate prior course work to demonstrate examination and evaluation skills, interventions, clinical decision-making, and appropriate responses to adverse patient responses. Patient simulations include pathologies commonly encountered in the inpatient setting. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 356. Psychosocial Aspects of Illness and Disability. 2 Units.

This course is a survey of psychological and social factors related to physical illness and disability. Scientific, theoretical and clinical literature are examined with emphasis on understanding the impact of illness and/or disability on the individual, the family, and the health care professional. This course also covers stress management and professional burn-out. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 357. Musculoskeletal Physical Therapy II. 2 Units.

This course is a continuation of PTHR 347. This course integrates and expands the student's understanding of previous physical therapy coursework as it applies to the musculoskeletal setting, and extends the student's knowledge of manual therapy techniques. Students apply concepts from previous coursework to the examination, evaluation, and intervention of patient/clients in the musculoskeletal/orthopedic setting with a regional emphasis on the spine and TMJ. Additionally students develop basic competencies in manual therapy techniques for the spine and TMJ. Prerequisites: Successful completion of all previous DPT courses or permission of instructor.

PTHR 358. Clinical Education and Early Career Development. 1 Unit.

This course will prepare students for success in full-time clinical experiences and beyond into early career. Students will be oriented to the performance instrument that will be used to evaluate their clinical performance, and to common teaching strategies used by clinical faculty. Topics also include conflict resolution, legal risk management, professional licensure, National Physical Therapy Examination preparation, and planning for ongoing professional development. Prerequisites: Successful completion of prior coursework in the DPT program or permission of the instructor.

PTHR 359. Full Time Clinical Education Experience I. 8 Units.

This course consists of full-time clinical experience under the supervision of licensed physical therapists at specified facilities, with which the University maintains an affiliation agreement. Prerequisite: Successful completion of all DPT courses or permission of instructor.

PTHR 368. Full Time Clinical Education Experience II. 8 Units.

This course consists of full-time clinical experience under the supervision of licensed physical therapists at specified facilities, with which the University maintains an affiliation agreement. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 369. Full Time Clinical Education Experience III. 10 Units.

This course consists of full-time clinical experience under the supervision of licensed physical therapists at specified facilities, with which the University maintains an affiliation agreement. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

PTHR 380. Medical Spanish for Physical Therapists. 1 Unit.

This elective course teaches the basic Spanish grammar, vocabulary and sentence structure necessary to communicate with patients in a physical therapy and/or medical setting. The course consists primarily of lectures and basic conversational interaction in Spanish. Prerequisites: Successful completion of all previous DPT course work or permission of the instructor.

PTHR 381. Soft Tissue Mobilization and Taping. 1 Unit.

This course teaches both soft tissue mobilization techniques for the various regions and structures of the human body as well as taping and strapping techniques to support and/or facilitate motion. The course consists primarily of labs with demonstration and supervised practice of techniques. Prerequisite: Successful completion of all previous DPT course work or permission of the instructor.

PTHR 391. Graduate Independent Study. 1-3 Units.**PTHR 393. Special Topics. 1-4 Units.****PTHR 393C. Special Topics. 4 Units.****PTHR 398. Research Literature Review. 1 Unit.**

This course helps the student apply the basic principles of research methods to the professional literature and to critically analyze new concepts and findings in that literature. The student chooses a research topic in health science, performs a literature search of primary research articles related to their topic, critically analyzes those research articles, and writes a related literature paper summarizing and synthesizing the information gathered from their literature research. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

Speech-Language Pathology

<http://www.pacific.edu/Academics/Schools-and-Colleges/Thomas-J-Long-School-of-Pharmacy-and-Health-Sciences/Academics/Speech-Language-Pathology.html>

Phone: (209) 946-2381

Location: Chan Family Health Sciences Learning Center

Derek Isetti, Ph.D., Department Chair

Program Offered

Master of Science in Speech-Language Pathology

Mission

Study and research in this department focus on typical and atypical speech, language and hearing processes. Students are prepared for professional careers in the field of Speech-Language Pathology. Clinical experience which supplements the students' academic preparation is obtained in the University's Speech, Hearing and Language Center, RiteCare Childhood Language Center of Stockton, the Language-Literacy Center, hospitals, clinics and schools. This program is designed to provide academic, clinical, and research experiences leading to the Master of Science degree, the Certificate of Clinical Competence in

Speech-Language Pathology, and California state licensure in Speech-Language Pathology. Students may also qualify for the California Speech-Language Pathology Services Credential.

The Master of Science in Speech-Language Pathology program is a full-time program with pre-professional program that leads toward a cohort based plan of study, accredited by the Council of Academic Accreditation of the American Speech-Language-Hearing Association. Students are required to enroll full-time and must advance through a pre-determined curriculum in sequence of speech-language pathology (SLP) courses with their cohort. Students are required to successfully pass each SLP course in a given semester in order to advance to the subsequent semester with their cohort and progress in the program. Students who do not pass an SLP course, or who withdraw from an SLP course, will not be able to progress with their cohort in the program. Students may be able to rejoin the program at a later date if allowed by program policy and approved by the program chair/director. All students must successfully complete clinical practicum requirements as an inherent part of the program. To earn a Master of Science degree in Speech-Language Pathology, each student must demonstrate clinical competence as well as academic success.

Clinical competence refers to:

1. The ability to identify individuals with communication disorders;
2. The ability to perform comprehensive evaluations of individuals with communication disorders;
3. The ability to facilitate positive changes in the communication skills of individuals with communication disorders;
4. The ability to relate effectively to clients, their families, and fellow professionals.

Program Specific Student Learning Outcomes

1. Integrate concepts across a number of disorder areas needed to effectively practice as an entry-level speech-language pathologist (SLP).
2. Independently design and implement comprehensive assessment and treatment plans for adults and children with communication disorders.
3. Communicate effectively in both written and oral formats in academic and clinical environments by considering developmental, physical, linguistic, and cultural factors relevant to clients, families, and professionals from a range of disciplines.

Student Learning Outcomes Specific to Certification in SLP

1. Demonstrate knowledge of statistics as well as the biological, physical, and social/behavioral sciences.
2. Demonstrate knowledge of basic human communication and swallowing processes, including the appropriate biological, neurological, acoustic, psychological, developmental, and linguistic and cultural bases.
3. Demonstrate the ability to integrate information pertaining to normal and abnormal human development across the life span.
4. Demonstrate knowledge of communication and swallowing disorders and differences, including the appropriate etiologies, characteristics, and anatomical/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates.
5. Demonstrate current knowledge of the principles and methods of prevention, assessment, and intervention for persons with communication and swallowing disorders, including consideration of anatomical/physiological, psychological, developmental, and linguistic and cultural correlates.
6. Demonstrate knowledge of standards of ethical conduct.

7. Demonstrate knowledge of processes used in research and of the integration of research principles into evidence-based clinical practice.
8. Demonstrate knowledge of contemporary professional issues.
9. Demonstrate knowledge of entry level and advanced certifications, licensure, and other relevant professional credentials, as well as local, state, and national regulations and policies relevant to professional practice.
10. Demonstrate skills in oral and written or other forms of communication sufficient for entry into professional practice.
11. Demonstrate skills in evaluation, intervention, and professional communication and interaction.
12. Complete a minimum of 400 clock hours of supervised clinical experience in the practice of speech-language pathology with at least 325 of the 400 clock hours completed at the graduate level. Twenty-five guided observation hours are also required.
13. Pass the national examination adopted by ASHA for purposes of certification and licensure in speech-language pathology.

Master of Science in Speech-Language Pathology - 15 Month Program

Students must complete a minimum of 55 units with a Pacific cumulative grade point average of 3.0 in order to earn the master of science degree in speech-language pathology.

Biology		4
Physical Science Course (Physics or Chemistry)		4
Child Development		4
Statistics		4
Introduction to Psychology or Sociology		4
SLPA 201	Professional Issues	1
SLPA 205	Adult Neurological Disorders I	3
SLPA 209	Language Disorders II	3
SLPA 211	Language Disorders III	3
SLPA 215	Aural Rehabilitation	2
SLPA 217	Voice Disorders	3
SLPA 219	Speech Sound Disorders II	3
SLPA 222	Adult Neurological Disorders II	3
SLPA 225	Public School Issues	1
SLPA 227	Auditory Processing Disorders	1
SLPA 229	Dysphagia/Swallowing Disorders	3
SLPA 231	Augmentative/Alternative Communication	2
SLPA 233	Cleft Palate and Syndromes	2
SLPA 237	Managed Care	1
SLPA 239	Assessment Procedures	1
SLPA 241	Research Methods	3
SLPA 245	Disorders of Fluency	2
SLPA 247	Autism Spectrum Disorders	3
SLPA 253	Medical Speech-Language Pathology	1
SLPA 255	Counseling Skills in Speech-Language Pathology	2
SLPA 287A	Internship in Speech and Hearing	2-4
SLPA 287B	Fieldwork in Speech and Hearing	2
SLPA 288	Externship	3-9
SLPA 289A	Advanced Clinic	1-3
SLPA 289B	Advanced Clinic	1-3

Select one of the following tracks:

A. Traditional (Clinical Focus) – Fulfilled by coursework above

B. SLPA 299 Thesis (See Graduate Program Director for further information)

CBEST Recommended

Master of Science in Speech-Language Pathology - 24 Month Program

Students must complete a minimum of 55 units with a Pacific cumulative grade point average of 3.0 in order to earn the master of science degree in speech-language pathology.

Biology		4
Physical Science Course (Physics or Chemistry)		4
Child Development		4
Statistics		4
Introduction to Psychology or Sociology		4
SLPA 105	Clinical Methods III	2
SLPA 107	Clinical Methods IV	1
SLPA 121	Speech and Language Development	3
SLPA 123	Language Disorders I	3
SLPA 125	Speech Sound Disorders I	3
SLPA 127	Audiology	3
SLPA 129	Anatomy and Physiology in Communication Sciences and Disorders	3
SLPA 131	Phonetics	3
SLPA 137	Speech and Hearing Science	3
SLPA 139	Diagnostics	3
SLPA 143	Culturally Responsive Practices	3
SLPA 201	Professional Issues	1
SLPA 205	Adult Neurological Disorders I	3
SLPA 209	Language Disorders II	3
SLPA 211	Language Disorders III	3
SLPA 215	Aural Rehabilitation	2
SLPA 217	Voice Disorders	3
SLPA 219	Speech Sound Disorders II	3
SLPA 222	Adult Neurological Disorders II	3
SLPA 225	Public School Issues	1
SLPA 227	Auditory Processing Disorders	1
SLPA 229	Dysphagia/Swallowing Disorders	3
SLPA 231	Augmentative/Alternative Communication	2
SLPA 233	Cleft Palate and Syndromes	2
SLPA 237	Managed Care	1
SLPA 239	Assessment Procedures	1
SLPA 241	Research Methods	3
SLPA 245	Disorders of Fluency	2
SLPA 247	Autism Spectrum Disorders	3
SLPA 253	Medical Speech-Language Pathology	1
SLPA 255	Counseling Skills in Speech-Language Pathology	2
SLPA 283	Diagnostic Lab	1
SLPA 287A	Internship in Speech and Hearing	2-4
SLPA 287B	Fieldwork in Speech and Hearing	2
SLPA 288	Externship	3-9
SLPA 289A	Advanced Clinic	1-3
SLPA 289B	Advanced Clinic	1-3

Select one of the following tracks:

A. Traditional (Clinical Focus) - Fulfilled by coursework above

B. SLPA 299 Thesis (See Graduate Program Director for further information)

CBEST Recommended

Speech Courses

SLPA 101. Clinical Methods I. 2 Units.

Students participate in observations and analysis of therapy, materials, teaching methods, behavioral management and data collection.

Prerequisite: SLPA051, SLPA121, SLPA125, SLPA129 and SLPA131 (concurrency allowed for all).

SLPA 103. Clinical Methods II. 1 Unit.

Students study methods, materials, and treatment of communicative disorders. Content includes: staffings, case studies, presentations, demonstrations, and class discussion. Corequisite: SLPA 123 & SLPA 137. Prerequisite: SLPA 127 (concurrent).

SLPA 105. Clinical Methods III. 2 Units.

This course assists the beginning clinician with: writing professional reports, accountability issues while exploring a variety of therapy delivery models. Corequisite: SLPA 139 & SLPA 151. Prerequisite: SLPA 101, SLPA 103, SLPA 183 or 181 (concurrent), and SLPA 189A or 110A (concurrent).

SLPA 107. Clinical Methods IV. 1 Unit.

Students discuss and analyze current clinical experiences. They also explore different disorders, populations, and work environments. Corequisite: SLPA 133 & SLPA 145. Prerequisite: SLPA 101, SLPA 103, SLPA 105, SLPA 143 (concurrent), and SLPA 189B or 110B (concurrent).

SLPA 110A. Clinical Observations. 1 Unit.

This course offers structured clinical observations for seniors not enrolled in SLPA 189A. Grading is Pass/No Credit only. Prerequisites: SLPA 101; SLPA 103; SLPA 181 or 183 (concurrent). Corequisites: SLPA 105, 139, & 151.

SLPA 110B. Clinical Observations. 1 Unit.

This course offers structured clinical observations for seniors not enrolled in SLPA 189B. Grading is Pass/No Credit only. Prerequisites: SLPA 101, 103, 105, & 143 (Concurrent). Corequisites: SLPA 107, 133, & 145.

SLPA 115. Aural Rehabilitation. 3 Units.

This course will cover the theory and methods of habilitation/rehabilitation of hearing-impaired children and adults. Procedures for assessment of hearing impairment, as well as speech and language development and intervention, speech conservation, speechreading, auditory training and amplification with individual hearing aids and FM systems will be covered. Prerequisites: SLPA 051, SLPA 101, SLPA 103, SLPA 105, SLPA 121, SLPA 123, SLPA 125, SLPA 127, SLPA 129, SLPA 131, SLPA 137, SLPA 139, SLPA 143, SLPA 151, SLPA 183 or SLPA 181, SLPA 189A or SLPA 110A, and SLPA 189B or SLPA 110B. Corequisites: SLPA 107 & SLPA 145.

SLPA 121. Speech and Language Development. 3 Units.

This course is designed to provide basic information relative to speech and language acquisition in normal children. Phonological, morphological, syntactic, semantic and pragmatic development is considered, as well as psychosocial and intellectual correlates. This course is open to non-majors and SLP minors.

SLPA 123. Language Disorders I. 3 Units.

This introductory course examines the speech language and behavioral characteristics associated with intellectual disabilities, learning disabilities, autism spectrum disorders, and neurological involvement. Discussion of appropriate diagnosis and therapeutic techniques is included. Open to non-majors and SLP minors. Prerequisites: SLPA 051, 101, 121, 125, 127 (concurrent), 129, & 131. Corequisites: SLPA 103 & 137.

SLPA 125. Speech Sound Disorders I. 3 Units.

An introduction to the etiology, assessment and remediation of articulation and phonologic disorders is the primary focus of the course. It is further designed to prepare students for the beginning clinical practicum experience. Prerequisites: SLPA 051 (concurrent); 121 (concurrent); 127; & 131 (concurrent). Corequisites: SLPA 101 & 129.

SLPA 127. Audiology. 3 Units.

This introductory course in audiology emphasizes basic acoustics and psychoacoustics, anatomy and physiology of the ear, hearing measurement (pure-tone, speech and tympanometry) and types of causes of hearing impairment. This course is open to non-majors and SLP minors. Prerequisites: SLPA 051, SLPA 121, & SLPA 131.

SLPA 129. Anatomy and Physiology in Communication Sciences and Disorders. 3 Units.

This course provides a foundation to the anatomy and physiology of speech, hearing, and swallowing. Topics include anatomy and physiology of respiration, hearing, phonation, articulation, resonance, and neurological functioning. This course is open to non-majors and SLP minors. Prerequisites: SLPA 051, SLPA 121, SLPA 127, & SLPA 131. Corequisites: SLPA 101 & SLPA 125.

SLPA 131. Phonetics. 3 Units.

Students study the analysis and classification of the phonemes of standard and nonstandard dialects of American English. The course includes: intensive practice in the use of the International Phonetic Alphabet, the intensive use of Visual Phonics, and the application of phonetics to communicative disorders. Open to non-majors and SLP minors. Prerequisites: SLPA 051 (concurrent). Corequisites: SLPA 101, SLPA 121, SLPA 125, & SLPA 129.

SLPA 133. Neurogenic Case Studies in Speech-Language Pathology. 3 Units.

This course requires students to integrate course content from all SLPA courses taken previously in analyzing and synthesizing clinical cases related to acquired neurogenic communication disorders. Corequisite: SLPA 107 & SLPA 145. Prerequisite: SLPA 051, SLPA 101, SLPA 103, SLPA 105, SLPA 121, SLPA 123, SLPA 125, SLPA 127, SLPA 129, SLPA 131, SLPA 137, SLPA 139, SLPA 143, SLPA 151, SLPA 183 or SLPA 181, SLPA 189A or SLPA 110A, and SLPA 189B or SLPA 110B.

SLPA 137. Speech and Hearing Science. 3 Units.

Speech and Hearing Science provides the student with academic and laboratory training in the sciences that provide the foundation of clinical practice in communication disorders. Students gain proficiency with various types of clinical equipment through hands-on experience. Open to non-majors and SLP minors. Corequisites: SLPA 103 & 123. Prerequisites: SLPA 051, SLPA 101, SLPA 121, SLPA 125, SLPA 127, SLPA 129, & SLPA 131.

SLPA 139. Diagnostics. 3 Units.

Students study the principles, models and methods of assessment of speech and language disorders. Topics include interview, testing, and reporting procedures. Corequisites: SLPA 105 & SLPA 151. Prerequisite: SLPA 051, SLPA 101, SLPA 103, SLPA 121, SLPA 123, SLPA 125, SLPA 127, SLPA 129, SLPA 131, SLPA 137, SLPA 183 or SLPA 181, and SLPA 189A or SLPA 110A.

SLPA 143. Culturally Responsive Practices. 3 Units.

Students examine theoretical models of normal second language acquisition and bilingualism that emphasize the relationship to accurate identification of communication disorders. The content distinguishes between language differences due to differing cultural linguistic variables and underlying, cross-lingual language impairment. Current research and trends in diagnosis and re-mediation techniques for multicultural clients is studied as well as problem-solving approaches for specific clinical cases. Open to non-majors and SLP minors with instructor permission. Prerequisites: SLPA 051, SLPA 101, SLPA 121, SLPA 125, SLPA 127, SLPA 129, & SLPA 131. (DVS, ETHC)

SLPA 145. Disorders of Fluency. 3 Units.

This introductory course in fluency disorders (stuttering) emphasizes etiology, theory, diagnosis and treatment of this speech disorder. Open to non-majors and SLP minors. Prerequisites: SLPA 051, SLPA 101, SLPA 103, SLPA 105, SLPA 121, SLPA 123, SLPA 125, SLPA 127 SLPA 129, SLPA 131, SLPA 137, SLPA 139, SLPA 143 (concurrent), SLPA 151, SLPA 183 or SLPA 181, SLPA 189A or SLPA 110A, & SLPA 189B or SLPA 110B (concurrent). Corequisites: SLPA 107 & SLPA 133.

SLPA 151. Behavior and Communication. 3 Units.

This class focuses on basic and advanced principles of behavior modifications as they relate to the area of communication sciences and disorders. Multiple strategies to increase, decrease, or modify behaviors are introduced. Theoretical and applied experiences in planning intervention strategies, measurement techniques, generalization and maintenance of changed behaviors are emphasized. Different models of understanding behavior which reflect an emphasis on neurodiversity affirming practice are highlighted. Prerequisite: SLPA 051, SLPA 101, SLPA 103, SLPA 121, SLPA 123, SLPA 125, SLPA 127, SLPA 129, SLPA 131, SLPA 137. Corequisite: SLPA 105 & SLPA 139.

SLPA 181. Diagnostic Observation. 1 Unit.

SLPA 181 offers structured diagnostic observations for seniors not registered in SLPA 183. Grading is Pass/No Credit only. Corequisites: SLPA 105, SLPA 139, & SLPA 151. Prerequisites: SLPA 051, SLPA 101, SLPA 103, SLPA 121, SLPA 123, SLPA 125, SLPA 127, SLPA 129, SLPA 131, SLPA 137, & SLPA 189A or 110A (concurrent).

SLPA 183. Diagnostic Laboratory. 1 Unit.

This course is a weekly three-hour lab experience that includes demonstration and practicum in assessment of speech and language disorders. Corequisite: SLPA 105, SLPA 139, and SLPA 151. Prerequisite: SLPA 051, SLPA 101, SLPA 103, SLPA 121, SLPA 123, SLPA 125, SLPA 127, SLPA 129, SLPA 131, SLPA 137, and SLPA 189A or SLPA 110A.

SLPA 189A. Beginning Clinic. 1 Unit.

This course provides students with direct beginning clinical experience in providing speech/language intervention to children/adolescents at the RiteCare Childhood Language Center of Stockton under the direct supervision of a licensed speech-language pathologist. Corequisites: SLPA 105, SLPA 139, & SLPA 151. Prerequisites: SLPA 051, SLPA 101, SLPA 103, SLPA 121, SLPA 123, SLPA 125, SLPA 127, SLPA 129, SLPA 131, SLPA 137, & SLPA 183 or SLPA 181 (concurrent).

SLPA 189B. Intermediate Clinic. 1 Unit.

This course provides students with direct intermediate level clinical experience in providing speech/language intervention to children/adolescents at the RiteCare Childhood Language Center of Stockton under the direct supervision of a licensed speech-language pathologist. Prerequisites: SLPA 051, SLPA 101, SLPA 103, SLPA 105, SLPA 121, SLPA 123, SLPA 125, SLPA 127 SLPA 129, SLPA 131, SLPA 137, SLPA 139, SLPA 143 (concurrent), SLPA 151, SLPA 183 or SLPA 181 (concurrent), & SLPA 189A or SLPA 110A (concurrent). Corequisites: SLPA 107, SLPA 133, & SLPA 145.

SLPA 191. Independent Study. 1-4 Units.

SLPA 193. Special Topics. 2-4 Units.

SLPA 201. Professional Issues. 1 Unit.

This seminar covers ethical and legal issues, practice standards, employment and business considerations for the practice of speech-language pathology.

SLPA 205. Adult Neurological Disorders I. 3 Units.

This class presents formal and informal assessment strategies and treatment strategies for adults who have language-based and motor speech-based communicative difficulties secondary to stroke, trauma, and degenerative conditions. Focus is directed to understanding and managing aphasia and motor speech disorders.

SLPA 209. Language Disorders II. 3 Units.

Students examine assessment and treatment of children and adolescents with language disorders in the language-for-learning and advanced language stages. An overview of language disorders in children and adolescents and the relationship between language and literacy are also components of this course.

SLPA 211. Language Disorders III. 3 Units.

Students examine assessment and treatment of children with language disorders in the prelinguistic, emerging, and developing language stages. Causation, prevention, and early intervention issues, as well as considerations for special populations, are also covered in this course.

SLPA 215. Aural Rehabilitation. 2 Units.

Students explore the theory and methods of habilitation/rehabilitation of hearing impaired children and adults. Procedures include speech and language development, speech conservation, speech reading, auditory training and amplification with individual and group hearing aids.

SLPA 217. Voice Disorders. 3 Units.

This graduate course concerns the study of the human voice and related disorders. Course content includes normal vocal development as well as functional and organic voice disorders. The primary course objective is to instruct students in the etiology, diagnosis, and treatment of vocal pathologies. Graduate standing.

SLPA 219. Speech Sound Disorders II. 3 Units.

This course is designed for the advanced student to describe the characteristics, classifications, and causes of articulation/phonological disorders; describe the principles of assessments and assessment procedures; describe concepts, principles, and approaches to treatment; integrate theories and research to clinical practice; and demonstrate clinical problem solving skills for individuals with speech sound disorders or differences.

SLPA 222. Adult Neurological Disorders II. 3 Units.

This class will explore the assessment and treatment strategies in the management of cognitive and communicative difficulties secondary to traumatic brain injuries, right hemisphere disorders, and dementia. Evidence-based, pragmatic and experiential approaches will be explored in the differential diagnosis and treatment of these disorders.

SLPA 225. Public School Issues. 1 Unit.

This seminar reviews the organization and administration of language, speech, and hearing programs in public schools. Students also review federal and state legislation and legal decisions influencing public school speech-language pathologists.

SLPA 227. Auditory Processing Disorders. 1 Unit.

The role of the speech-language pathologist in the process of screening, diagnosis, evaluation and treatment of auditory processing disorders. Students obtain experience in administering and interpreting auditory processing screening tests and developing management plans.

SLPA 229. Dysphagia/Swallowing Disorders. 3 Units.

This graduate-level course investigates the nature of normal and abnormal swallowing function, the causes of dysphagia, its assessment and clinical management.

SLPA 231. Augmentative/Alternative Communication. 2 Units.

The course provides students with information about unaided and aided systems for alternative and augmentative communication. Students gain information and laboratory experiences that help them determine the most appropriate devices and methods of therapy for an individual and how to incorporate them into a complete communication system.

SLPA 233. Cleft Palate and Syndromes. 2 Units.

Students analyze research and theory in etiology, diagnosis and treatment of craniofacial anomalies and other genetic syndromes that involve communicative disorders. Diagnosis and treatment of speech disorders associated with cleft palate are emphasized.

SLPA 237. Managed Care. 1 Unit.

This is a graduate seminar in ethical and legal issues, practice standards, employment and government regulations for the speech-language pathologist who practices in the medical environment.

SLPA 239. Assessment Procedures. 1 Unit.

This course provides students with hands-on, practical experience administering, scoring, analyzing, and interpreting formal and informal speech/language assessment tests and measures. Speech/language assessment procedures and report writing are also taught in this course.

SLPA 241. Research Methods. 3 Units.

Students explore various research methodologies and statistical designs applicable to communicative disorders. They study and critically evaluate empirical studies from current literature and examine scholarly and professional writing skills. Students learn the application of the scientific method and the use of qualitative and quantitative data as it applies to the assessment and treatment of clients with communicative disorders.

SLPA 245. Disorders of Fluency. 2 Units.

This is an introductory course in fluency disorders with emphasis upon etiology, theory, diagnosis, and treatment of stuttering and cluttering.

SLPA 247. Autism Spectrum Disorders. 3 Units.

Students examine the assessment and treatment of children and adolescents with autism spectrum disorders. An overview of the nature and characteristics of autism spectrum disorders, as well as associated neurobiological factors, are additional topics taught in this course.

SLPA 253. Medical Speech-Language Pathology. 1 Unit.

This course is designed to introduce graduate level clinicians in Speech-Language Pathology to the medical setting.

SLPA 255. Counseling Skills in Speech-Language Pathology. 2 Units.

This course is designed to enhance students' counseling skills, therapeutic effectiveness and relationship with future clients, and knowledge of areas and techniques important in counseling. Teaching will be through didactic and experiential processes. The experience of self-actualization through various exercises will be emphasized.

SLPA 283. Diagnostic Lab. 1 Unit.

A weekly three-hour lab experience that includes demonstration and practicum in the assessment of speech and language disorders.

SLPA 287A. Internship in Speech and Hearing. 2-4 Units.

Graduate level introductory clinical practicum course providing clinical assessment and treatment experience with children and/or adolescents under the direct supervision of a licensed, certified speech-language pathologist in a school setting.

SLPA 287B. Fieldwork in Speech and Hearing. 2 Units.

Graduate level advanced clinical practicum course providing clinical assessment and treatment experience with children and/or adolescents under the direct supervision of a licensed, certified speech-language pathologist in a school setting.

SLPA 288. Externship. 3-9 Units.

This experience is designed to provide students with a full-time, supervised experience in the field. Educational and medical settings are available. Open only to students who have completed all of their academic coursework, comprehensive examinations, and have maintained a graduate GPA of 3.0 or higher. Course may be repeated.

SLPA 289A. Advanced Clinic. 1-3 Units.

This course provides students with direct beginning/intermediate clinical experience in providing speech/language intervention to children/adolescents at the RiteCare Childhood Language Center of Stockton or adults at the Pacific Speech, Hearing, and Language Center Clinic under the direct supervision of a licensed speech-language pathologist.

SLPA 289B. Advanced Clinic. 1-3 Units.

This course provides students with direct intermediate/advanced level clinical experience in providing speech/language intervention to children/adolescents at the RiteCare Childhood Language Center of Stockton or the Pacific Speech, Hearing, and Language Center Clinic under the direct supervision of a licensed speech-language pathologist.

SLPA 291. Graduate Independent Study. 1-4 Units.**SLPA 293. Special Topics. 2-4 Units.****SLPA 297. Graduate Research. 1-4 Units.****SLPA 299. Thesis. 2 or 4 Units.**

The Thomas J. Long School of Pharmacy

<http://www.pacific.edu/pharmacy>

Phone: (209) 946-2561

Rae R. Matsumoto, Dean

Bhaskara R. Jasti, Associate Dean, Graduate Education & Research,

Executive Director, Jie Du Center for Innovation & Drug Development,

Tara L. Jenkins, Associate Dean, Academic Affairs Pharmacy Practice,

Associate Professor

Allen Shek, Associate Dean, Professional Programs

Marcus Ravnar, Associate Dean, Student Affairs and Enrollment

Susan Webster, Executive Director of Development

Programs Offered

Master of Science in Pharmaceutical and Chemical Sciences

Doctor of Philosophy in Pharmaceutical and Chemical Sciences

Doctor of Pharmacy/Doctor of Philosophy in Pharmaceutical and Chemical Sciences

Doctor of Pharmacy/Master of Science in Pharmaceutical and Chemical Sciences

Doctor of Pharmacy

The mission of the Thomas J. Long School of Pharmacy is to prepare students for lifelong success in health careers by providing an excellent, student-centered learning environment. Students will develop their leadership skills and strong commitment to their professions and to society. We support outstanding professional and graduate teaching, research and other scholarly activity, and service as the means of achieving our mission.

The graduate programs offered by the Thomas J. Long School of Pharmacy include the Doctor of Philosophy and Master of Science degrees in the Pharmaceutical and Chemical Sciences, the Doctor of Pharmacy/Doctor of Philosophy and Doctor of Pharmacy/Master of Science in Pharmaceutical and Chemical Sciences, the Doctor of Pharmacy/Master of Business Administration. Each of these programs provides excellent education, training and mentoring.

Pharmaceutical and Chemical Sciences Program

Phone: (209) 946-2405

Website: pharmacy.pacific.edu/pharmacy/pcsp (<https://pharmacy.pacific.edu/pharmacy/pcsp/>)

Programs Offered

Master of Science in Pharmaceutical and Chemical Sciences Doctor of Philosophy in Pharmaceutical and Chemical Sciences

Master of Science and Doctor of Philosophy degrees are available in five areas of interdisciplinary emphasis: Bioanalytical Chemistry, Physical Chemistry, and Biochemistry, Molecular-Cellular Pharmacology and Toxicology, Chemical Synthesis, Drug Discovery and Design, Biopharmaceutical Sciences, and Health Care Outcomes and Clinical Services.

The Graduate Program also offers combined PharmD/PhD and PharmD/MS degrees. These unique dual-degree programs are intended for students who are interested in careers in research and teaching, but who wish to also possess a professional degree in pharmacy.

The goal of the Pharmaceutical and Chemical Sciences Program (PCSP) curriculum is to prepare students for the challenges of both basic and applied research, to advance knowledge in an area of specialization, to encourage fundamental discovery in the chemical, pharmaceutical and healthcare sciences, and to attain advanced degrees. Faculty from the departments of chemistry, pharmaceuticals and medicinal chemistry, physiology and pharmacology, and pharmacy practice bring their research interests and expertise to the program. Students are encouraged to combine the talents of the faculty into a unique, student-centered and interdisciplinary program that meet their individual educational goals. Upon the completion of the education from PCSP, graduates are self-motivated learners who possess broad knowledge in pharmaceutical and chemical sciences and specialized knowledge in their area of focus, as well as research and experimental skills needed for success in pharmaceutical, biotechnological, and chemical industries or academia.

Admission Requirements

Entering students should have the equivalent of a Pacific Bachelor's degree with at least a "B" average (3.0 GPA) in all upper-division coursework. On the GRE scoring system, the minimum combined scores for verbal/quantitative sections are 303 and 3.0 or higher in analytical section.

Depending on the research focus area, there are minimum undergraduate units required in the mathematical, physical, chemical, pharmaceutical and biological disciplines.

Students should also include an essay or personal statement that focuses on their career objectives and personal ideals, and three letters of recommendation, no older than 1-year-old.

International Students: In addition to meeting coursework, GPA and GRE requirements, International Students whose native language is not English must submit their TOEFL (Test of English as a Foreign Language) scores when they apply to the program. The minimum acceptable score is 550 (paper-based) or 80 (Internet-based). Those students who want to be considered for a Graduate Assistant (GAs) position, must score at least 575 (paper-based test), or 90 (Internet) on TOEFL and are required to demonstrate English speaking skills by a telephone interview. TOEFL scores can be no older than 2 years old. Students must also provide financial supporting documentation, which can be no older than 6 months old. We also accept IELTS (International English Language Testing System) scores. Students considering a GA position must score at least 7.0. The minimum score for admission is 6.5.

International students who attended schools outside of the United States must submit an evaluation of their academic records. Transcripts must be reviewed by one of the following outside evaluation agency: WES (World Education Services), www.wes.org, or Educational Credential Evaluators (ECE), www.ece.org. Please request a course-by-course evaluation that includes a grade point average (GPA) and have an official copy sent directly to the Graduate School. Student transcripts need to be translated into English before an evaluation can be processed. Please check with the evaluation agency for details on specific document requirements.

Please refer to the Admissions section of this catalog or visit www.pacific.edu (<http://www.pacific.edu/>) and go to the Graduate School web page and consult the International Applicants and Transcript Evaluation sections for up-to-date admissions criteria or for more information concerning other required application materials and instructions.

PharmD/MS and PharmD/PhD Programs

This dual-degree program combines the features of the professional PharmD degree with the teaching and research components of the MS and PhD. It offers a unique opportunity for students who intend to extend their professional pharmacy training into a career in teaching and/or research. The combined program trains outstanding teachers and researchers who are in high demand for employment by industry and academia.

Program Description

The PharmD/MS is usually completed in a minimum of four years and the PharmD/PhD in a minimum of five years. During the first two years, students concentrate on the PharmD curriculum, but take graduate level elective courses when possible. The Doctor of Pharmacy curriculum is described in the University's General Catalog. Students do not need to decide in which area of pharmaceutical science they will focus on when applying to the program, but they are expected to choose an area of research concentration and a research advisor by the end of their first year of study. The later years of the program are devoted to graduate course work, experiential training in the Stockton area, research, and thesis or dissertation writing. The State Pharmacy Board Exam may be taken following completion of the Doctor of Pharmacy curriculum, usually in the fourth year.

Admission Procedure

The minimum requirement for admittance to the program is a BA or BS degree with a GPA of 3.0 or greater. The application process requires separate applications to the PharmD professional program and the graduate programs. The application fee for the MS and PhD programs is waived. The Office of Admission accepts two letters of recommendation

and transcripts submitted with the PharmD application. Four additional items are required for admission:

1. The completed graduate application form;
2. A personal statement from the applicant stating his/her goals relative to a research and/or teaching career and selecting one of the five tracks preferred;
3. GRE scores on the General Test;
4. A letter of recommendation from someone who is familiar with the student's research abilities. If such a letter is already included in the PharmD application, a third letter from an academic person is acceptable.

Pharmaceutical and Chemical Sciences

Programs Offered

The program offers training in one of these five focus areas: Bioanalytical and Physical Chemistry, Chemical Synthesis, Drug Discovery and Design, Molecular-Cellular Pharmacology and Toxicology, and Pharmacoeconomics and Health Care Outcomes and Clinical Services, leading to the following degrees in Pharmaceutical and Chemical Sciences:

Master of Science
Doctor of Philosophy
Combined Doctor of Pharmacy and Doctor of Philosophy

Mission

The mission of the Pharmaceutical and Chemical Sciences Graduate Program (PCSP) is to prepare Doctor of Philosophy and Master of Science graduates for working in the increasingly complex and integrated research in the pharmaceutical, chemical and biotechnological environment. This integrated, multidisciplinary program provides a student-centered learning environment and will produce new scientists with both broad and in-depth training by preparing them for work as part of interdisciplinary research/development teams.

The PCSP program is offered jointly by the School of Pharmacy and College of the Pacific. The participating departments in the program are Chemistry, Pharmacy Practice, Pharmacology and Physiology and Pharmaceutics and Medicinal Chemistry.

Program Goals

The goals of the PCSP curriculum are to:

- prepare students for the challenges in both basic and applied research
- advance knowledge in pharmaceutical and chemical sciences
- encourage fundamental discovery in the chemical, pharmaceutical and healthcare sciences

For additional information and admission requirements visit:

<https://grad.pacific.edu/sites/default/files/users/user277/Pharmaceutical%20%26%20Chemical%20Sciences.pdf>

Master of Science

1. **Multidisciplinary Communication**
 - Effectively communicate research methods/findings and their importance to a multidisciplinary audience within the functional area of research and development.

2. Conduct Research

- Effectively use research methods in the concentration to conduct research with supervisory guidance.

Doctor of Philosophy

1. Multidisciplinary Communication

- Effectively communicate research methods/findings and their importance to a diverse multidisciplinary audience involved in the research and development.

2. Independently Conduct Research

- Effectively use research methods in the concentration to conduct independent and original research.

Master of Science in Pharmaceutical and Chemical Sciences

Students must complete a minimum of 32 units with a Pacific cumulative grade point average of 3.0 in order to earn the Master of Science degree in Pharmaceutical and Chemical Sciences.

I. Category I (minimum 8 units)

PCSP 201	Statistics and Experimental Design	3
PCSP 203	Information and Laboratory Management	1
PCSP 209	Technical Writing and Presentation	1

Select one of the following:

PCSP 205	Instrumental Analytical Chemistry	
PCSP 207	Bioanalytical Techniques	
PCSP 208	Applied Pharmaceutical Analysis	
PCSP 263	Analytical Techniques in Pharmaceconomics and Health Care Outcomes and Services	

II. Category II (minimum 7 units)

PCSP 283	Multidisciplinary Project	1
PCSP 295	Graduate Seminar (Required to register once every academic year)	2
PCSP 297	Graduate Research *	2
PCSP 299	Thesis **	2

* PCSP 297 is optional in the non-thesis option.

** PCSP 299 is not required in the non-thesis option.

Thesis Requirement

Students conduct research, write a thesis and complete a final oral defense of their thesis. The thesis is based upon a research project that constitutes a contribution to knowledge, or the student must design and evaluate a unique procedure or program in their field. A minimum of two semesters of full-time residence at the University is required following the baccalaureate degree or the equivalent in part-time residence during summers. The average time to complete the program is approximately 2-3 years.

Thesis Committee

The committee is formed after a student selects an advisor for his/her research. The committee assists the student in designing a plan of study, providing the student with guidance in his/her thesis research and monitoring the student's research progress.

Internship (optional)

Students complete an internship outside the University in either an industry setting or at another research institution. The internship provides valuable work experience and better prepares the student

for future careers working within an interdisciplinary research and development team.

III. Courses in Specialized Areas

Complete required and elective courses in one of the following specialized areas:

A. Bioanalytical Chemistry, Physical Chemistry and Biochemistry

PCSP 212	Methods in Bioanalytical, Physical and Biochemistry	2
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Select two of the following (with approval of advisor):

PCSP 240	Molecular Spectroscopy	
PCSP 244	High-Resolution NMR Spectroscopy	
PCSP 245	Proteins and Nucleic Acids	
PCSP 246	Selected Topics in Advanced Biochemistry	
PCSP 247	Mass Spectrometry	
PCSP 248	Enzymology	

Preferred Elective Courses: *

PCSP 206	Models and Concepts in Chemistry	
PCSP 215	Molecular Modeling and Drug Design	
PCSP 217	Drug Biotransformation	
PCSP 222	Thermodynamics of Pharmaceutical Systems	
PCSP 230	Molecular Pharmacology of Nucleic Acids	
PCSP 234	Neurochemical Pharmacology	
PCSP 237	Cell Culture Techniques	
PCSP 241	Advanced Organic/Bioorganic Chemistry	
PCSP 242	Selected Topics: Advanced Organic Chemistry	
PCSP 243	Applied Computational Chemistry	
PCSP 245	Proteins and Nucleic Acids	
PCSP 246	Selected Topics in Advanced Biochemistry	
PCSP 248	Enzymology	

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

B. Chemical Synthesis, Drug Discovery and Design

PCSP 241	Advanced Organic/Bioorganic Chemistry	4
PCSP 242	Selected Topics: Advanced Organic Chemistry	4
PCSP 244	High-Resolution NMR Spectroscopy	4

Preferred Elective Courses: *

PCSP 206	Models and Concepts in Chemistry	
PCSP 211	Drug Design	
PCSP 213	Biotransformation of Pharmaceutical Agents	
PCSP 215	Molecular Modeling and Drug Design	
PCSP 217	Drug Biotransformation	
PCSP 222	Thermodynamics of Pharmaceutical Systems	
PCSP 230	Molecular Pharmacology of Nucleic Acids	
PCSP 234	Neurochemical Pharmacology	
PCSP 237	Cell Culture Techniques	
PCSP 245	Proteins and Nucleic Acids	
PCSP 246	Selected Topics in Advanced Biochemistry	
PCSP 247	Mass Spectrometry	
PCSP 248	Enzymology	

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

C. Health Care Outcomes and Clinical Services

PCSP 254	Research Processes: Publications, Presentations, Grants and IRB	3
PCSP 258	Teaching and Evaluation of Learning and Competency	2
PCSP 265	Health Care Economics	2
Preferred Elective Courses: *		
BUSI 250	Health Finance: Health Insurance	
PCSP 255	Long Term Care Practice	
PCSP 256	Health Services Management and Finance	
PCSP 257	Ambulatory Care Practice	
PCSP 259	Topics in Acute Care Practice	
PCSP 260	Advances in Neuropsychiatric Pharmaceutical Care	

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

D. Biopharmaceutical Sciences

Select two of the following:

PCSP 213	Biotransformation of Pharmaceutical Agents	
PCSP 214	Advanced Molecular Biochemistry	
PCSP 222	Thermodynamics of Pharmaceutical Systems	
PCSP 223	Pharmacokinetics and Pharmacodynamics	
PCSP 224	Diffusion in Pharmaceutical Sciences	

Preferred Elective Courses: *

BIOL 222	Immunology	
PCSP 205	Instrumental Analytical Chemistry	
PCSP 207	Bioanalytical Techniques	
PCSP 211	Drug Design	
PCSP 216	Emerging Technologies in Drug Discovery	
PCSP 218	Animal Techniques for Pharmaceutical Sciences	
PCSP 225	Pharmaceutical Technologies	
PCSP 228	Mathematical Modeling in Pharmaceutical Research	
PCSP 229	Advances in Drug Delivery Systems	
PCSP 236	Selected Topics: Advanced Toxicology	
PCSP 237	Cell Culture Techniques	
PCSP 246	Selected Topics in Advanced Biochemistry	
PCSP 248	Enzymology	

Non-thesis Required Courses: 7

PCSP 226	Industrial Pharmacy I	4
PCSP 227	Industrial Pharmacy II	3

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

E. Molecular-Cellular Pharmacology and Toxicology

PCSP 231	Molecular & Cellular Pharmacology	4
Preferred Elective Courses: *		
PCSP 205	Instrumental Analytical Chemistry	
PCSP 213	Biotransformation of Pharmaceutical Agents	
PCSP 233	Molecular Pharmacology III	
PCSP 236	Selected Topics: Advanced Toxicology	
PCSP 237	Cell Culture Techniques	

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

Doctor of Philosophy in Pharmaceutical and Chemical Sciences

Students must complete a minimum of 45 units with a Pacific cumulative grade point average of 3.0 in order to earn the Doctor of Philosophy degree in Pharmaceutical and Chemical Sciences.

Note: Except the category 2 courses, the units taken for the M.S. degree in the Pharmaceutical and Chemical Sciences Graduate Program at the University of the Pacific can be transferred to his/her Ph.D. study plan. The student must enroll in the Ph.D program no later than two years after receiving the M.S. degree in the Pharmaceutical and Chemical Sciences Graduate Program at the University of the Pacific.

I. Category I

PCSP 201	Statistics and Experimental Design	3
PCSP 203	Information and Laboratory Management	1
PCSP 209	Technical Writing and Presentation	1

Select one of the following:

PCSP 205	Instrumental Analytical Chemistry	
PCSP 207	Bioanalytical Techniques	
PCSP 208	Applied Pharmaceutical Analysis	
PCSP 263	Analytical Techniques in Pharmaceconomics and Health Care Outcomes and Services	

II. Category II

PCSP 283	Multidisciplinary Project	1
PCSP 395	Graduate Seminar (Required to register once every academic year)	3
PCSP 397	Graduate Research (6 units is minimum total degree requirement)	6
PCSP 399	Dissertation (2 units is minimum total degree requirement)	2

Note: Students are encouraged to complete coursework during the early part of their graduate studies so that the latter part of the program can be spent on full-time research.

Internship

Students complete an internship outside the University in either an industry setting or at another research institution. The internship provides valuable work experience and better prepares the student for future careers working within an interdisciplinary research and development team.

Dissertation

Student conduct original research, write a dissertation, and complete a final oral defense of their dissertation. The dissertation is based upon a research project that constitutes a fundamentally new contribution to knowledge in their field. A minimum of two semesters of full-time residence at the University, is required following the baccalaureate degree or the equivalent in part-time residence during summers. The average time to complete the program is approximately 5-6 years.

Dissertation Committee

The committee is formed after a student selects an advisor for his/her research. The committee assists the student in designing a plan of study, providing the student with guidance in his/her research, and monitoring the student's research progress. The student ultimately presents his/her dissertation to the committee. The dissertation must provide a genuine contribution to knowledge in the student's focus area. The committee also conducts the dissertation defense. The defense is the final comprehensive oral examination based for the most part on the dissertation, but also covers the entire field of study.

Qualifying Examinations

To be eligible for qualifying exams, the student must complete all core courses and required courses for dissertation research that the student has elected to pursue. Exams should be taken within an appropriate amount of time, preferably before the end of the third year. The content and requirements of the qualifying exams are defined by the research focus area and consist of comprehensive written and oral examinations.

III. Courses in Specialized Areas

Complete required and elective courses in one of the following specialized areas:

A. Bioanalytical Chemistry, Physical Chemistry and Biochemistry

PCSP 212	Methods in Bioanalytical, Physical and Biochemistry	2
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Select two of the following (with approval of advisor):

PCSP 240	Molecular Spectroscopy
PCSP 244	High-Resolution NMR Spectroscopy
PCSP 245	Proteins and Nucleic Acids
PCSP 246	Selected Topics in Advanced Biochemistry
PCSP 247	Mass Spectrometry
PCSP 248	Enzymology

Preferred Elective Courses: *

PCSP 206	Models and Concepts in Chemistry
PCSP 215	Molecular Modeling and Drug Design
PCSP 217	Drug Biotransformation
PCSP 222	Thermodynamics of Pharmaceutical Systems
PCSP 230	Molecular Pharmacology of Nucleic Acids
PCSP 234	Neurochemical Pharmacology
PCSP 237	Cell Culture Techniques
PCSP 241	Advanced Organic/Bioorganic Chemistry
PCSP 242	Selected Topics: Advanced Organic Chemistry
PCSP 243	Applied Computational Chemistry
PCSP 245	Proteins and Nucleic Acids
PCSP 246	Selected Topics in Advanced Biochemistry
PCSP 248	Enzymology

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

B. Chemical Synthesis, Drug Discovery and Design

PCSP 241	Advanced Organic/Bioorganic Chemistry	4
PCSP 242	Selected Topics: Advanced Organic Chemistry	4
PCSP 244	High-Resolution NMR Spectroscopy	4

Preferred Elective Courses: *

PCSP 206	Models and Concepts in Chemistry
PCSP 211	Drug Design
PCSP 213	Biotransformation of Pharmaceutical Agents
PCSP 215	Molecular Modeling and Drug Design
PCSP 217	Drug Biotransformation
PCSP 222	Thermodynamics of Pharmaceutical Systems
PCSP 230	Molecular Pharmacology of Nucleic Acids
PCSP 234	Neurochemical Pharmacology
PCSP 237	Cell Culture Techniques
PCSP 245	Proteins and Nucleic Acids
PCSP 246	Selected Topics in Advanced Biochemistry
PCSP 247	Mass Spectrometry
PCSP 248	Enzymology

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

C. Health Care Outcomes and Clinical Services

PCSP 254	Research Processes: Publications, Presentations, Grants and IRB	3
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PCSP 258	Teaching and Evaluation of Learning and Competency	2
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PCSP 265	Health Care Economics	2
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Preferred Elective Courses: *

BUSI 250	Health Finance: Health Insurance
PCSP 255	Long Term Care Practice
PCSP 256	Health Services Management and Finance
PCSP 257	Ambulatory Care Practice
PCSP 259	Topics in Acute Care Practice
PCSP 260	Advances in Neuropsychiatric Pharmaceutical Care

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

D. Biopharmaceutical Sciences

Select two of the following:

PCSP 213	Biotransformation of Pharmaceutical Agents
PCSP 214	Advanced Molecular Biochemistry
PCSP 222	Thermodynamics of Pharmaceutical Systems
PCSP 223	Pharmacokinetics and Pharmacodynamics
PCSP 224	Diffusion in Pharmaceutical Sciences

Preferred Elective Courses: *

BIOL 222	Immunology
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PCSP 205	Instrumental Analytical Chemistry
PCSP 207	Bioanalytical Techniques
PCSP 211	Drug Design
PCSP 216	Emerging Technologies in Drug Discovery
PCSP 218	Animal Techniques for Pharmaceutical Sciences
PCSP 225	Pharmaceutical Technologies
PCSP 226	Industrial Pharmacy I
PCSP 227	Industrial Pharmacy II
PCSP 228	Mathematical Modeling in Pharmaceutical Research
PCSP 229	Advances in Drug Delivery Systems
PCSP 236	Selected Topics: Advanced Toxicology
PCSP 237	Cell Culture Techniques
PCSP 246	Selected Topics in Advanced Biochemistry
PCSP 248	Enzymology

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

E. Molecular-Cellular Pharmacology and Toxicology

PCSP 231	Molecular & Cellular Pharmacology	4
Preferred Elective Courses: *		
PCSP 205	Instrumental Analytical Chemistry	
PCSP 213	Biotransformation of Pharmaceutical Agents	
PCSP 233	Molecular Pharmacology III	
PCSP 236	Selected Topics: Advanced Toxicology	
PCSP 237	Cell Culture Techniques	

* This is a preferred list of electives. Additional electives can be chosen in consultation of advisor. Electives must be at the 200 level or above. Courses below 200 level must be approved by PCSP committee.

Pharm Chem Sciences Courses

PCSP 201. Statistics and Experimental Design. 3 Units.

This course involves the study of the application and limitations of statistical methods of inference as they apply to the fields of chemistry and the pharmaceutical sciences. Topics include the use of parametric statistics for statistical inference, comparisons of means, analysis of variance and linear regression. Parametric statistics and nonparametric measures of association and elements of good experimental design are also included. Graduate standing.

PCSP 203. Information and Laboratory Management. 1 Unit.

This course covers basic knowledge of Information Management, Intellectual Property and Patenting, Research Laboratory Operations and Safety, Good Maintenance Practice (GMP) and Good Clinical Practice (GCP). Graduate standing.

PCSP 204. Introduction to Nanotechnology. 4 Units.

The course provides an overview of Molecular Nanotechnology. It shows that the nano regime is so different from other regimes because both classical and quantum effects can be active, thus leading to unique properties of nano devices. MNT is a highly interdisciplinary science, which will be reflected in the course by making reference to physics, chemistry, biology, pharmacy and engineering. Applications of MNT, as they are already in use today or as they are planned for the future, will be discussed. Graduate standing or permission of instructor.

PCSP 205. Instrumental Analytical Chemistry. 4 Units.

Lectures focus on the theory and physical principles of instruments for the analysis of matter. Laboratory lecturer describes the actual operation of instruments. Students gain hands-on experience with the operation of instruments. Graduate standing.

PCSP 206. Models and Concepts in Chemistry. 4 Units.

The course focuses on a general understanding of chemistry in terms of models and concepts that describe structure, stability, reactivity and other properties of molecules in a simple, yet very effective way. Many chemical problems from organic, inorganic, and transition metal chemistry and biochemistry are presented and the applicability of the various models and concepts as well as their limitations are demonstrated. Graduate standing or permission of instructor.

PCSP 207. Bioanalytical Techniques. 3 Units.

Students are introduced to techniques of bioanalysis for the pharmaceutical and chemical sciences. The course provides a conceptual understanding and practical familiarity with techniques used for analysis of proteins and nucleic acids. Recommended: Basic biochemistry.

PCSP 208. Applied Pharmaceutical Analysis. 4 Units.

Students study analytical methods applied for the assessment of pharmaceutical quality, and the identification and quantification of active pharmaceutical molecules and metabolites in biological samples. Prerequisite: any analytical Chemistry or Biology background and permission of instructor.

PCSP 209. Technical Writing and Presentation. 1 Unit.

This course covers common written and oral forms of communication and scientific material. Graduate standing.

PCSP 211. Drug Design. 4 Units.

Students study modern methods used in the design of new drugs. Target selection, lead compound discovery and molecular modifications to optimize activity are studied. Graduate standing or bachelor's degree and permission of instructor.

PCSP 212. Methods in Bioanalytical, Physical and Biochemistry. 2 Units.

As a general survey, this course is an introduction to the current methodologies commonly used in bioanalytical, physical and biochemistry labs. These methods will be investigated by understanding their use in the lab and through studies published in the primary scientific literature. Lecture will focus on the technique and instruments and a lab component will consist of a demonstration of the method. A mini project that using a single selected methodology will be performed by each student with a final report detailing the underlying technology and theory.

PCSP 213. Biotransformation of Pharmaceutical Agents. 3 Units.

This course teaches the graduate students the chemical and biological principles of the transformations of pharmaceutical agents in the body and the impact of such transformations on pharmacokinetics, pharmacodynamics, toxicity, drug design and drug delivery. Graduate standing in TJ Long School of Pharmacy & Health Sciences or in Chemistry Department, or permission of instructor.

PCSP 214. Advanced Molecular Biochemistry. 4 Units.

This course presents a conceptual study of cellular function and control mechanisms at the molecular level. Prerequisite: Graduate standing.

PCSP 215. Molecular Modeling and Drug Design. 4 Units.

The course presents a thorough and in-depth overview of methods and techniques in computer assisted drug design (CADD) where especially the needs of the pharmaceutical industry are considered. Graduate standing or permission of instructor.

PCSP 216. Emerging Technologies in Drug Discovery. 2 Units.

This course is designed mainly for graduate students, with emphasis on new concepts in the discovery of small molecules and biologic drugs. Graduate student standing with advanced molecular biochemistry background and interested Professional students who completed PHAR 116.

PCSP 217. Drug Biotransformation. 3 Units.

This course generally meets two times a week (two 75-minute lectures per week). In this course, a mechanistic approach is employed to study human drug metabolizing enzymes. Other aspects related to the differential expression of these enzymes are discussed. Students need to submit a research proposal at the end of the course. Graduate standing or permission of instructor.

PCSP 218. Animal Techniques for Pharmaceutical Sciences. 2 Units.

This course is designed to present an opportunity for graduate students to understand and apply animal techniques to pharmaceutical science research. Prerequisite: Graduate standing or permission of the instructor.

PCSP 219. PK/PD Modeling and Simulation with Simcyp Simulator. 1 Unit.

This course is designed to introduce the basic PK/PD modeling and simulation using the Simcyp simulator software. Students must not be on probation and must not have failed or received No Credit in any courses. Prerequisites: Graduate student standing with successful completion of PCSP 223 or Professional students with successful completion of PHAR 213 and PHAR 311, or instructor permission.

PCSP 221. Fundamentals of Dosage Forms. 3 Units.

In this course the fundamental physicochemical properties and composition of various dosage forms is taught. Graduate standing.

PCSP 222. Thermodynamics of Pharmaceutical Systems. 3 Units.

This is a classical course on the applications of thermodynamics to the study of pharmaceutical systems. The course includes a review of the basic principles of thermodynamics. These principles are used to describe and study physical and chemical transformations of pure substances and mixtures in pharmaceutical systems. Graduate standing or permission of instructor.

PCSP 223. Pharmacokinetics and Pharmacodynamics. 3 Units.

This course teaches critical concepts and basic principles of pharmacokinetics and pharmacodynamics. Such concepts and principles are required for the students to understand the drug behavior in the body. Graduate standing or permission of instructor.

PCSP 224. Diffusion in Pharmaceutical Sciences. 3 Units.

Students discuss diffusion theories, experimental methods, and application to pharmaceutical/biological systems. Prerequisites: CHEM 161 and MATH 033 or equivalent or permission of instructor.

PCSP 225. Pharmaceutical Technologies. 2 Units.

Students study theory and practice in industrial pharmacy that include pre-formulation, formulation and pharmaceutical manufacture. Prerequisites: PHAR 114, 123, 133. Graduate standing.

PCSP 226. Industrial Pharmacy I. 4 Units.

This course is the first part of Industrial Pharmacy series designed mainly for graduate students, with emphasis unit operations, technology and formulation of pharmaceuticals. This is also very useful to professional students who are interested to pursue careers in pharmaceutical and biopharmaceutical industry. The basic understanding of Preformulation, pharmaceutical operations as they are applied to solid dosage forms from laboratory scale to manufacturing scale will be discussed in lectures and all students will do hands on experiments. In addition, quality and regulatory processes will be outlined for solid dosage forms. Prerequisites: PHRM 114 and PHRM 124.

PCSP 227. Industrial Pharmacy II. 3 Units.

This course is the second part of Industrial Pharmacy course series designed mainly for graduate students, with emphasis unit operations, technology and formulation of pharmaceuticals. This is also very useful to professional students who are interested to pursue careers in pharmaceutical and biopharmaceutical industry. The basic understanding of pharmaceutical operations as they are applied to semi-solid and modified release dosage forms from laboratory scale to manufacturing scale will be discussed in lectures and all students will conduct hands on experiments. In addition, quality and regulatory processes will be outlined for semi-solid and modified release dosage forms. Prerequisites: PHRM 114; PHRM 124; PCSP 226.

PCSP 228. Mathematical Modeling in Pharmaceutical Research. 3 Units.

Students study the mathematical modeling theory and application to problems in pharmaceutical research. Modeling is applied to three major areas: drug delivery, metabolic/biological cascades and pharmacological response kinetics. Prerequisites: PHAR 113 or permission of instructor. Recommended: MATH 057; PHAR 114 and PHAR 134.

PCSP 229. Advances in Drug Delivery Systems. 3 Units.

In this course the design and formulation/fabrication of controlled release and other novel drug delivery systems for oral, transdermal, ocular and other routes of delivery are covered. The biopharmaceutical rational and evaluation of such systems is also discussed. Graduate standing.

PCSP 230. Molecular Pharmacology of Nucleic Acids. 3 Units.

Students study the mechanisms by which drugs and other chemicals can affect gene expression and cell division through actions on DNA structure and nucleic acid and protein metabolism. Graduate standing.

PCSP 231. Molecular & Cellular Pharmacology. 4 Units.

This is the first course in the Molecular Pharmacology series. Effects of autonomic and central nervous system therapeutic agents and the mechanisms whereby these effects are induced. Drug classes are presented to illustrate the effects of drug classes in the treatment of disease. The molecular principles of drug action and receptor theory are covered. Enrollment in the PCSP program is required.

PCSP 233. Molecular Pharmacology III. 4 Units.

This is the third course in the Molecular pharmacology series, effects of antimicrobial, hematologic and gastrointestinal therapeutic agents and the mechanism whereby these are induced. Drug classes are presented to illustrate the effects of drug classes in the treatment of diseases. The mechanisms of drug toxicity are also covered. Enrollment in the PCSP program is required.

PCSP 234. Neurochemical Pharmacology. 3 Units.

Students study neurobiology of nerve cells and the neurochemical pharmacology associated with function of central and peripheral nervous systems. Graduate standing.

PCSP 236. Selected Topics: Advanced Toxicology. 2 Units.

This course teaches students the organ systems and mechanistic approach to toxicological assessment. Quantitative, environmental and regulatory aspects of toxicology are included as essential elements of toxicological evaluation. Graduate standing in the PCSP program or permission of instructor.

PCSP 237. Cell Culture Techniques. 3 Units.

This course teaches students basic techniques in mammalian cell culture. In addition, advanced topics of cellular techniques are demonstrated and discussed representative of current research methods. Permission of PCSP Program Director.

PCSP 240. Molecular Spectroscopy. 4 Units.

The basic theory behind infrared, visible, ultraviolet, and magnetic resonance spectroscopy are studied. The course includes the quantum mechanics of light absorption, atomic absorption and emission spectroscopy, vibrational spectroscopy of diatomic and polyatomic molecules, absorption and emission electronic spectroscopy and magnetic resonance spectroscopy. Graduate standing or permission of instructor.

PCSP 241. Advanced Organic/Bioorganic Chemistry. 4 Units.

Synthetically useful organic reactions not normally covered in the introductory courses are emphasized. The reactions are grouped according to their mechanistic type and discussed in terms of their reaction mechanisms and synthetic utility. Prerequisites: CHEM 121 and CHEM 123 with a "C" or better.

PCSP 242. Selected Topics: Advanced Organic Chemistry. 4 Units.

Topics presented at various times under this course description include: Physical organic, natural products and structure elucidation, stereochemistry, heterocycles and carbohydrate chemistry. Prerequisites: CHEM 121 and CHEM 123 with a "C" or better.

PCSP 243. Applied Computational Chemistry. 4 Units.

Besides the normal laboratory experiments traditionally expected, modern chemists/biochemists, whether in the chemical/pharmaceutical industry or academia, perform "experiments" on the computer by calculating the outcome of chemical and biochemical reactions. This in silico chemistry has become an integral part of the education in chemistry and the present course will provide an introduction into this field by addressing a general audience of chemists/biochemists and students from neighboring fields.

PCSP 244. High-Resolution NMR Spectroscopy. 4 Units.

A study of one and two dimensional FT-NMR techniques used for structure elucidation of organic molecules. Emphasis is placed on understanding the capabilities and limitations of these techniques, the information they provide and the practical aspects of their implementation. Permission of instructor.

PCSP 245. Proteins and Nucleic Acids. 3 Units.

Students study the chemical, physical and biological properties of the proteins and nucleic acids and their constituents. Topics include isolation, determination of composition, sequence and structure; correlation of structure and biological properties. Prerequisite: CHEM 151 with a "C" or better.

PCSP 246. Selected Topics in Advanced Biochemistry. 4 Units.

The field of biochemistry is always developing in new and different directions; the purpose of this course is to expose graduates students to the newest and most cutting edge research topics in the field of biochemistry. The materials will primarily primary literature articles. Graduate students will learn to quickly process scientific papers and then, synthesize simple explanations of notable research areas in biochemistry. Graduate students will refine these skills in a series of lectures by the student and instructor as well as student led discussions.

PCSP 247. Mass Spectrometry. 4 Units.

Students study the fundamentals of mass spectrometry, theory, instrumentation and applications to organic and biological molecules. Prerequisite: PCSP 205.

PCSP 248. Enzymology. 4 Units.

This class gives an introduction into the biochemistry of the various classes of enzymes with emphasis on laboratory techniques. Prerequisite: CHEM 151 with a "C" or better.

PCSP 254. Research Processes: Publications, Presentations, Grants and IRB. 3 Units.

This course prepares graduate students in Pharmacoeconomics and Health Care Outcomes and Services as a successful researcher by gaining experience in the development of a research plan, obtaining approval of the Institutional Review Board, submission of an extramural grant, dissemination of the student findings at a national or international meeting, and submission of a manuscript to a peer-reviewed journal. Prerequisite may be taken concurrently: PCSP 201, or other comparable statistics course at the discretion of the course coordinator. Permission of the instructor is required.

PCSP 255. Long Term Care Practice. 3 Units.

This class covers the clinical pharmacy component of a long term facility with special emphasis on opportunities and research needs. Students study the systematic approach to monitor the drug therapy of the long term care patient. Graduate standing.

PCSP 256. Health Services Management and Finance. 2 Units.

Health Care Finance offers an introduction to accounting, financial theory and practice in health care settings. It is designed to familiarize students with financial concepts and issues confronting managers in the health and pharmaceutical sectors. Prerequisites: Admission to the PCSP graduate program and permission of the instructor.

PCSP 257. Ambulatory Care Practice. 3 Units.

Students examine the application of clinical pharmacy to ambulatory care settings in an affiliated clinic or community pharmacy. Special emphasis is placed on opportunities and research needs. Graduate standing.

PCSP 258. Teaching and Evaluation of Learning and Competency. 2 Units.

Student abilities in development as a teacher are developed in an interactive, evidence-based manner covering the major components of teaching, learning, evaluation and assessment. Prerequisites: Admission to the PCSP graduate program and permission of the instructor.

PCSP 259. Topics in Acute Care Practice. 3 Units.

Students examine the application and investigation of clinical pharmacy in acute care setting with emphasis on medical management of common diseases and rational drug selection and dosing. Graduate standing.

PCSP 260. Advances in Neuropsychiatric Pharmaceutical Care. 2 Units.

Students examine pharmaceutical care for the patient with neurologic and psychiatric disorders. Emphasis is placed on appropriate use of drug therapy in the management of these disorders. Graduate standing. Permission of instructor.

PCSP 261. Advances in Cardiovascular Pharmaceutical Care. 3 Units.

Students explore the application of Drug Therapy to patient care with assignments that expand the students' knowledge of background material that support therapeutic guidelines. Permission of instructor.

PCSP 262. Vascular, Renal and Pulmonary Care. 4 Units.

Students study the pharmaceutical care for the patient with cardiovascular, respiratory and renal diseases. Emphasis is placed on appropriate use of drug therapy in the management of the disease. Prerequisites: Successful completion of all courses in semesters 1-3 of the Doctor of Pharmacy Program.

PCSP 263. Analytical Techniques in Pharmacoconomics and Health Care Outcomes and Services. 4 Units.

This course prepares graduate students in Pharmacoconomics and Health Care Outcomes and Services to meet the challenges of a broad assortment of health services related research by providing fundamental principles and tools for the discipline. The class uses real world examples of research design, statistical evaluations and database selection and use to assess therapeutic, economic and humanistic outcomes. Prerequisites: PCSP 201 and PCSP 203.

PCSP 264. Applied Statistics in Health Services Research and Analysis. 3 Units.

This course prepares graduate students in Pharmacoconomics and Health Care Outcomes and Services to meet the challenges posed by the needed to rapidly and accurately review, critique and assimilate information from health care and economic literature and to complete a full, advanced statistical analysis such as that required for the introduction and discussion sections of a research article or dissertation in pharmacoconomics and health care outcomes. Prerequisites: PCSP 201, 203, 263.

PCSP 265. Health Care Economics. 2 Units.

This course is a current medical literature based course and is designed to prepare graduate students in Pharmacoconomics and Health Care Outcomes and Services to meet challenges associated with understanding microeconomics terms and tools used in health care, medical literature and health care decision making processes. Readings, lectures and discussions emphasize processes used in economic decisions made by health care consumers, providers and third party payers. Primary topics include the demand for health care, how it may vary based on payment/payer options and the scope and supply of care available. Prerequisites: PCSP 263, 264, and permission of the instructor.

PCSP 266. Pharmacoconomics and Microeconomics/Managerial Economics. 2 Units.

This course is designed to prepare graduate students in Pharmacoconomics and Health Care Outcomes and Services to evaluate the applicability, importance and relevancy of pharmacoconomics, microeconomics and managerial economics in answering questions and solving problems within the US health care system. Additionally, after completion of this course, students can assess, apply, interpret and determine the appropriate utilization of pharmacoconomics, microeconomic, and managerial economic principles to address relevant healthcare issues and questions. Prerequisites: PCSP 201 and permission of the instructor.

PCSP 270. Theory and Methodology of Simulation of Natural Rock Formation. 4 Units.

This course is created particularly for PhD students of the Pharmaceutical and Chemical Sciences Program. It offers a comprehensive integration of multi-disciplinary sciences such as biology, life science, geoscience, ocean science, environment science, material science, etc. The course introduces some new breakthroughs and frontier discovery which reveal the mystery relationship between life science and geoscience. Upon completion of this course, PhD students are able to carry out professional lab and on-site tests and measurements. Graduate standing in chemistry, biology, geology, material science, environmental science or engineering or permission of instructor.

PCSP 271. Design Thinking for Entrepreneurs. 2 Units.

The course will examine aspects of an entrepreneur's journey and the elements that would be needed in his/her toolbox to tackle challenges - from ideation to economic viability. This course will benefit anyone interested in working in the industry as lead scientists, entrepreneurs, program champions, investors, technology transfer agents etc. Students will be introduced to the steps needed to form and grow a company including access to capital, collaborators, legal, and partners. Topics include an overview of the global biotechnology industry, idea generation, business plan formulation, intellectual property, raising capital, human resources including board composition, regulatory strategy, and company exits. Prerequisites: Graduate student standing with successful completion of PCSP 283 or Professional students that successfully completed first 3 semester, or instructor permission. Students must not be on probation and must not have failed or received No Credit in any courses.

PCSP 272. Clinical Pharmacology in Drug Development. 2 Units.

The course will cover important aspects of clinical pharmacology related to drug development. This course will benefit anyone interested in learning how to bring a compound to approval. The course will be delivered by leading experts in the field, with case studies presented for each topic covered. Prerequisites: student standing or Professional students that successfully completed the first 3 semesters, industry professionals or instructor permission. Students must not be on probation and must not have failed or received No Credit in any courses.

PCSP 273. Marketing Principles and Applications for Pharma Entrepreneurs. 2 Units.

The course will cover all of the basic marketing principles, including the 4 P's (Product, Promotion, Price and Place) and how to apply them to real world situations. This includes understanding and assessing markets for new pharma/biotech products. Key marketing elements that will be critical as components in product development process, forming a new company, gaining investor support, and ultimately in successful commercialization will be explored. Discussions will be structured for the stages of drug development from preclinical through to Phase 3 and the typical marketing elements that are needed for each stage. Factors relevant to the value proposition, the competitive landscape, and adoption of a new medical product and how to manage these factors in the early design and development phases will be also be covered. Guest speakers will be included to provide a heightened understanding and real world insights. Prerequisites: Graduate student standing or Professional students that successfully completed the first 3 semesters, industry professionals or instructor permission. Students must not be on probation and must not have failed or received No Credit in any courses.

PCSP 274. Regulatory Science for Drug Development Scientists. 2 Units.

The course will cover underlying scientific principles that forms the basis of federal regulations and guidance provided for drug development and approval. This course will benefit anyone interested in learning how to bring a drug product to approval. The course will be delivered by leading expert(s) in the field, with case studies for each topic covered. Prerequisites: Graduate student standing or Professional students that successfully completed the first 3 semesters, industry professionals or instructor permission. Students must not be on probation and must not have failed in any courses.

PCSP 275. Molecular and Cellular Pharmacology. 3 Units.

Students will learn the pharmacological principles, the mechanism of action of prototype drugs at the molecular and cellular levels and develop an appreciation of advanced research topics in current pharmacological science. Prerequisites: Graduate standing in Pharmaceutical and Chemical Sciences Program (PCSP).

PCSP 278. Molecular Physiology. 5 Units.

This course will cover physiological principles and molecular events that underlie the function of the nervous, cardiovascular, and respiratory systems at the organ and cellular levels. Prerequisites: MS and PhD Students.

PCSP 283. Multidisciplinary Project. 1 Unit.

Students in the Pharmaceutical and Chemical Science Graduate Program design an interdisciplinary project based upon the relevant contributions of their backgrounds. Enrollment in PCSP Graduate Program.

PCSP 287. Internship. 1-4 Units.

The internship offers an experiential learning program at a pharmaceutical/chemical/biotechnological industry, academic institution, government laboratory, or a clinical site that entitles the students to learn advanced techniques and practical application of the theoretical principles learned in a number of courses. Graduate students that have completed Category I course work, or obtained permission of coordinator shall enroll in this course. For students in thesis/dissertation tracks, concurrence of thesis/dissertation adviser(s) is required.

PCSP 291. Independent Study. 1-4 Units.

Independent Study is restricted to masters or doctoral (PhD) candidates. It may be repeated with permission as progress warrants. No more than eight credits may be used toward doctoral degree requirements. The student must be in good academic standing. Approval of the required contract for Independent Graduate Study is required. Graduate standing and permission of the instructor.

PCSP 295. Graduate Seminar. 1 Unit.

This seminar presents research-related topics given by both PCSP faculty and graduate students. Enrolled students are required to attend all seminars given throughout the pharmacy academic year and to give one seminar in that year. This course is required for all graduate students for the first three years of their tenure in the PCSP. Students who have already enrolled in this course for three years are encouraged to attend seminars without official enrollment. PCSP faculty members present a short talk on their research areas at the beginning of the fall semester each year. Graduate standing.

PCSP 297. Graduate Research. 1-4 Units.

Graduate Research is limited to masters or doctoral (PhD) candidates. It may be repeated with permission as progress warrants. No more than eight credits may be used toward doctoral degree requirements. Admission to the graduate program and permission of research director.

PCSP 299. Thesis. 1-6 Units.

This course provides one-to-one work by student with faculty research mentor to plan, organize, conduct, evaluate and write an original research project as a thesis for partial fulfillment of the MS degree. Admission to MS thesis program (PCSP) and permission of research advisor.

PCSP 387. Internship. 1-4 Units.

This internship offers an experiential learning program at a pharmaceutical/chemical/biotechnological industry, academic institution, government laboratory, or a clinical site that entitles the students to learn advanced techniques and practical application of the theoretical principles learned in a number of courses. Graduate Standing with completed Category I course work or permission of coordinator. For students in thesis/dissertation tracks, concurrence of thesis/dissertation adviser(s) is required.

PCSP 391. Independent Study. 1-4 Units.

Independent Study is restricted to masters or doctoral (PhD) candidates. It may be repeated with permission as progress warrants. No more than eight credits may be used toward doctoral degree requirements. The student must be in good academic standing. Approval of the required contract for Independent Graduate Study is required. Graduate standing and permission of the instructor.

PCSP 391D. Independent Study. 1-4 Units.**PCSP 395. Graduate Seminar. 1 Unit.**

This seminar presents research-related topics given by both PCSP faculty and graduate students. Enrolled students are required to attend all seminars given throughout the pharmacy academic year and to give one seminar in that year. This course is required for all graduate students for the first three years of their tenure in the PCSP. Students who have already enrolled in this course for three years are encouraged to attend seminars without official enrollment. PCSP faculty members present a short talk on their research areas at the beginning of the fall semester each year. Graduate standing.

PCSP 397. Graduate Research. 1-4 Units.

Graduate Research is limited to masters or doctoral (PhD) candidates. It may be repeated with permission as progress warrants. No more than eight credits may be used toward doctoral degree requirements. Admission to the graduate program and permission of research director.

PCSP 397A. Graduate Research. 1-4 Units.**PCSP 397B. Graduate Research. 1-4 Units.****PCSP 397C. Graduate Research. 1-4 Units.****PCSP 397D. Graduate Research. 1-4 Units.****PCSP 397E. Graduate Research. 1-4 Units.****PCSP 399. Dissertation. 1-6 Units.**

This course is only open to doctoral (PhD) candidates. No more than eight credits may be used toward doctoral degree requirements. Admission to PhD program (PCSP) and permission of research advisor.

University Administration

The Administration

Title	Name
President	Chris Callahan
Provost and Executive Vice President for Academic Affairs	Maria G. Pallavicini
Vice President for Business and Finance	Kenneth Mullen
Vice President for Enrollment Management	Chris Ferguson
Vice President for Student Life	Carrie Lovelace Petr
Vice President for University Development and Alumni Relations	Burnie Atterbury
General Counsel	Kevin Mills
Vice President for Technology and Chief Information Officer	Art Sprecher
Associate Vice President for University Strategic Communications	Marge Grey
Director of Intercollegiate Athletics	Janet Lucas

Office of the Provost

Title	Name
Provost and Executive Vice President for Academic Affairs	Maria G. Pallavicini
Chief of Staff to the Provost	TBD
Vice Provost for Faculty Affairs	Joan Lin-Cereghino
Vice Provost for Undergraduate Education	Edith Sparks
Vice Provost for Strategy and Educational Effectiveness	Cyd Jenefsky
Associate Provost	Elisa Anders
Associate Provost of Research	James Uchizono
Assistant Provost for Budget and Finance	Yuhang Shi
Chief Compliance Officer	Jared B. Gaynor
Director, Center for Teaching and Learning	Lott Hill
University Registrar	Karen Johnson

School and College Deans

Title	Name
Dean, College of the Pacific	Rena Fraden
Senior Associate Dean	Gregg Jongeward
Associate Dean	Scott Jensen
Dean, Conservatory of Music	Peter Witte
Dean, Eberhardt School of Business	Tim Carroll
Associate Dean, Academic Programs	Cynthia Eakin
Dean, Benerd College	Patricia Campbell
Senior Associate Dean	Linda Webster
Associate Dean	Farley Staniec
Associate Dean	Rod Githens
Assistant Dean	Kyle Harkness
Dean, School of Engineering and Computer Science	Steven Howell
Associate Dean	Michael Doherty
Dean, School of Health Sciences	Nicoleta Burnariu
Dean, Thomas J. Long School of Pharmacy	Rae Matsumoto
Associate Dean for Academic Affairs	Eric Boyce
Associate Dean for Graduate Education and Research	Xiaoling Li
Associate Dean for Student Affairs Enrollment Management	Marcus Ravnan

Associate Dean for Professional Programs	Allen Shek
Assistant Dean for External Relations	Nancy DeGuire
Associate Dean for Operations	Linda Norton
Assistant Dean for Pre-Pharmacy and Pre-Health Affairs	Marcus Ravnan
Dean, Graduate School	TBD
Dean, Pacific McGeorge School of Law	Michael Schwartz
Associate Dean, Academic Affairs	Mary-Beth Moylan
Associate Dean, Faculty Scholarship	Rachel Salccu
Associate Dean of Administration	Jeff Proske
Assistant Dean, Development	Mindy Danovaro
Assistant Dean, Law Library	James Wirrell
Assistant Dean, Student Affairs	Alicia Morrell
Assistant Dean, Admissions and Financial Aid	Tracy Simmons
Dean, Arthur A. Dugoni School of Dentistry	Nader A. Nadershahi
Executive Associate Dean	Eve Cuny
Associate Dean, Clinical Services	Des Gallagher
Associate Dean, Fiscal Services	Edward Pegueros
Assistant Dean for Admissions, Student Life & Diversity	Stan Constantino
Assistant Dean, Academic Affairs	Daniel J. Bender
Dean, University Library	Mary Somerville

Office of Vice President for Business and Finance

Title	Name
Vice President for Business and Finance	Kenneth M. Mullen
Associate Vice President for Business and Finance	Ron Ellison
Assistant Vice President, Human Resources	Linda Jeffers
Assistant Vice President, Chief Facilities Officer	Steve Greenwood
Assistant Vice President, Chief Investment Officer	Jol Manilay
Associate Controller	Audrey George
Director, Budget	Jonallie Parra
Chief Audit Executive, Internal Audit Operations	Randy Schwantes
Director, Procurement Services	Ronda Marr
Director, Risk Management	Roberta Martoza

Director, San Francisco Campus	Kara Bell
Director, Student Business Services	Elizabeth Ledesma
Director, University Payroll Services	Tara Juano

Director, Orientation and Transition Programs	Ashton Ricketts
Director, Public Safety (Sacramento)	Jason Darling
Director, Public Safety (San Francisco)	John Feeny
Director, Religious and Spiritual Life/Multifaith Chaplain	Laura Steed
Director, Services for Students with Disabilities	Danny Nuss
Director, Student Health Services	Dayna Cerruti-Barbero
Director, University Bookstore	Jeremy Levenberg
Director, Upward Bound Program	Rosa Montes

Office of Vice President for External Relations

Office of the Vice President for Development and Alumni Relations

Title	Name
Vice President	Burnie Atterbury
Sr. Associate Vice President, Principle Giving & Leadership Administration	Scott Biederman
Sr. Associate Vice President, Development and Advancement Unit Administration	Cathy Wooton
Associate Vice President, Alumni Operations	Kelli Page

Office of Vice President for Student Life

Title	Name
Vice President for Student Life	Carrie Lovelace Petr
Associate Vice President for Student Well-Being/Dean of Students	Rhonda Bryant
Associate Vice President for Student Involvement and Equity	Allison Dumas
Associate Vice President/Executive Director, Career Development	Tom Vecchione
Executive Director, Public Safety	Grant Bedford
Executive Director, Residential Life, Housing, and Dining Auxiliary	Joe Berthiaume
Executive Director, Assessment and Student Development Services	Sandra Mahoney
Executive Director, Campus Life	Marc Falkenstein
Executive Director, Community Involvement & Educational Equity Programs	TBD
Associate Dean of Students (Sacramento and San Francisco)	TBD
Assistant Dean of Students	Anne Eastlick
Director, Campus Career Partnerships	Deb Crane
Director, Corporate & Employer Engagement	Robin MacEwan
Director, Counseling & Psychological Services	Kimberlee DeRushia
Director, Dining Services	Sia Mohsenzadegan
Director, SUCCESS	TBD
Director, Finance and Administration	Breann Northcutt
Director, Intercultural Student Success	TBD

Campus Buildings and Facilities

Click the map below for a larger view. An interactive campus map can be found at <http://www.pacific.edu/Campus-Map.html>



UNIVERSITY OF THE
PACIFIC

3601 PACIFIC AVE. STOCKTON, CA 95211

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Academic Calendar

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- Semester Programs (p. 181)
- Semester Law Programs (p. 181)
- Trimester Programs (p. 181)

Quarter Programs

Arthur A. Dugoni School of Dentistry

Dental (DDS, IDS, Certificates, and Dental Graduate Programs)

Semester Programs

Arthur A. Dugoni School of Dentistry

Dental Hygiene

Benerd College

All Programs

College of the Pacific

All Programs

Conservatory of Music

All Programs

Eberhardt School of Business

All Programs

School of Engineering and Computer Science

All Programs

School of Health Sciences

Athletic Training

Speech-Language Pathology

School of International Studies

All Programs

The Thomas J. Long School of Pharmacy

Pre-Pharm

Semester Law Programs

McGeorge School of Law

All Programs

Trimester Programs

School of Health Sciences

Master of Science in Clinical Nutrition (Sacramento)

Master of Science in Nursing (Sacramento)

Master of Physician Assistant Studies (Sacramento)

Master of Social Work (Sacramento)

Doctor of Audiology (San Francisco)

Doctor of Occupational Therapy (Sacramento)

Doctor of Physical Therapy (Stockton)

The Thomas J. Long School of Pharmacy

Pharmaceutical and Chemical Sciences

PharmD

The calendar on this page is for the following program.

Arthur A. Dugoni School of Dentistry

Dental (DDS, IDS, Certificate, and Dental Graduate Programs)

2022-2023

Summer 2022 Quarter

Description	Date(s)
Matriculation Week	July 12 - 15
Classes Begin	July 18
Labor Day (Holiday - no classes)	September 5
Last day to add classes (enrichment courses only)	September 26
*Last day to drop classes without record of enrollment	September 26
Study Day	September 27
Final Examination Period	September 28 - 30
Autumn Student Break	October 3 - 7
Grades Due	October 5

Autumn 2022 Quarter

Description	Date(s)
Classes Begin	October 10
Thanksgiving Break	November 24 - 25
Last day to add classes (enrichment courses only)	December 19
*Last day to drop classes without record of enrollment	December 19
Study Day	December 20
Final Examination Period	December 21 - 23
Winter Student Break	December 26 - January 6
Grades Due	January 11

Winter 2023 Quarter

Description	Date(s)
Classes Begin	January 9
Martin Luther King, Jr. Day (Holiday - no classes)	January 16
Presidents' Day (Holiday - no classes)	February 20
Last day to add classes (enrichment courses only)	March 20
*Last day to drop classes without record of enrollment	March 20
Study Day	March 21

Final Examination Period	March 22 - 24
Spring Student Break	March 27 - 31
Grades Due	March 29

Spring 2023 Quarter

Description	Date(s)
Classes Begin	April 3
Memorial Day (Holiday - no classes)	May 29
Last day to add classes (enrichment courses only)	June 12
*Last day to drop classes without record of enrollment	June 12
Study Day	June 13
Final Examination Period	June 14 - 16
Commencement	June 18
Summer Student Break	June 19 - July 14
Grades Due	June 21

2023-2024

Summer 2023 Quarter

Description	Date(s)
Matriculation Week	July 11 - 14
Classes Begin	July 17
Labor Day (Holiday - no classes)	September 4
Last day to add classes (enrichment courses only)	September 25
*Last day to drop classes without record of enrollment	September 25
Study Day	September 26
Final Examination Period	September 27 - 29
Autumn Student Break	October 2 - 6
Grades Due	October 4

Autumn 2023 Quarter

Description	Date(s)
Classes Begin	October 9
Thanksgiving Break	November 23 - 24
Last day to add classes (enrichment courses only)	December 18
*Last day to drop classes without record of enrollment	December 18
Study Day	December 19
Final Examination Period	December 20 - 22
Winter Student Break	December 25 - January 5
Grades Due	January 10

Winter 2024 Quarter

Description	Date(s)
Classes Begin	January 8
Martin Luther King, Jr. Day (Holiday - no classes)	January 15
Presidents' Day (Holiday - no classes)	February 19
Last day to add classes (enrichment courses only)	March 18
*Last day to drop classes without record of enrollment	March 18
Study Day	March 19
Final Examination Period	March 20 - 22

Spring Student Break	March 25 - 29
Grades Due	March 27

Spring 2024 Quarter

Description	Date(s)
Classes Begin	April 1
Memorial Day (Holiday - no classes)	May 27
Last day to add classes (enrichment courses only)	June 10
*Last day to drop classes without record of enrollment	June 10
Study Day	June 11
Final Examination Period	June 12 - 14
Commencement	June 16
Summer Student Break	June 17 - July 12
Grades Due	June 19

* Dropping core curriculum courses is only possible as part of a complete withdrawal from the university.

The calendar on this page is for the following programs.

Arthur A. Dugoni School of Dentistry
Dental Hygiene

Benerd College
All Programs

College of the Pacific
All Programs

Conservatory of Music
All Programs

Eberhardt School of Business
All Programs

School of Engineering and Computer Science
All Programs

School of Health Sciences
Athletic Training
Speech-Language Pathology

School of International Studies
All Programs

The Thomas J. Long School of Pharmacy
Pre-Pharm

Fall 2022

Description	Date(s)
Payment Deadline for Fall	August 1
Classes Begin	August 29
Labor Day (Holiday - no classes)	September 5
# Last Day to Add Classes	September 9
# Last Day for Pass/No Credit or Letter Grade Option	September 9
# Last Day to Drop Classes (without record of enrollment)	September 9
Census Date	October 1

Fall Student Break	October 7
Spring Semester Schedule of Classes Available	October 10
* Advising for Spring Semester - continuing students	October 17-28
Last Day for Pro-Rated Refund	October 19
Last Day to Withdraw	October 28
* Early Registration Appointments Begin Spring Semester - continuing students	October 31
Thanksgiving Break	November 23-25
Classes Resume	November 28
Classes End	December 9
Deadline to Petition to Walk in May Commencement, Excluding School of Health Sciences (Summer 2022 Graduates)	December 10
Final Examination Period	December 12-16
Deadline for Faculty to Submit Grades Online (5:00 pm)	December 20

Spring 2023

Description	Date(s)
Payment Deadline for Spring	January 1
Martin Luther King, Jr. Day (Holiday - no classes)	January 16
Classes Begin	January 17 (Tuesday)
# Last Day to Add Classes	January 27
# Last Day for Pass/No Credit or Letter Grade Option	January 27
# Last Day to Drop Classes (without record of enrollment)	January 27
Presidents' Day (Holiday - no classes)	February 20
Census Date	March 1
Last Day for Pro-Rated Refund	March 10
Summer Semesters /Fall Semester Schedule of Classes Available	March 13
Spring Break	March 13-17
* Advising Begins for Summer Semesters /Fall Semester - continuing students	March 20-31
Classes Resume	March 20
Last Day to Withdraw	March 25
Deadline to file Application for Graduation Fall 2023/Spring 2024/Summer 2024	April 1
Application for Graduation Opens for Fall 2024/ Spring 2025/Summer 2025	April 2
* Registration Opens Summer Semester - continuing students (no appointments required)	April 3
* Early Registration Appointments Begin Fall 2022 - April 3 continuing students	April 3
Classes End	May 2
Study Day	May 3
Final Examination Period	May 4-10
Commencement (Stockton)	May 13
Deadline for Faculty to Submit Grades (5:00 pm)	May 15
Commencement - School of Health Sciences (held in Sacramento)	May 20

Summer 2023

Description	Date(s)
Summer Session 1 (5 weeks)	May 15-June 16
Memorial Day (Holiday - no classes)	May 29
Juneteenth (Holiday - no classes)	June 19
Summer Session 2 (5 weeks)	June 19-July 21
Fourth of July (Holiday - no classes)	July 4
Summer Session 3 (5 weeks)	July 24-August 25
Student Break (no classes)	August 2

Footnotes

- # Advisers should arrange to be available on this day
- * Limited to Currently enrolled students

The calendar on this page is for the following programs.

McGeorge School of Law
All Programs

Fall 2022 & Spring 2023 Registration Dates

Description	Date(s)
Fall Registration: Seniors, MSL, MPP, MPA, LLM, JSD & AHP	June 21
Fall Registration: JD Continuing Students	June 22
Spring Registration: Seniors, MSL, MPP, MPA, LLM, JSD & AHP	June 23
Spring Registration: JD Continuing Students	June 24

Fall Semester 2022

Description	Date(s)
LLM Orientation Begins	August 4
JD First Year (Part-Time), MSL & MPP/MPA Orientation Begins	August 8
JD First Year (Full-Time) Orientation Begins	August 9
Classes Begin	August 15
Last Day to Add/Drop Classes (without record of enrollment & administrative approval)	August 22
Labor Day (Holiday - no classes)	September 5
Study Day (Classes made up - last Tuesday of semester)	September 30
Last day of Classes (Friday classes Only-makes up Study Day)	November 22
Thanksgiving Break	November 23 - 25
Reading Period	November 26 - 29
Final Examination Period	November 30 - December 14
Winter Break	December 15 - January 2

Spring Semester 2023

Description	Date(s)
Interession Period	January 3 - 8
LLM, MPP, MPA & JSD Orientation Begin	January 5
Classes Begin	January 9
Martin Luther King, Jr. Day (Holiday - no classes - Classes made up on Mon. Apr. 24)	January 16
Last Day to Add/Drop Classes (without record of enrollment & administrative approval)	January 17
Presidents' Day (Holiday - no classes - Classes made up on Tues. Feb 21 & Tuesday classes made up on Tues. Apr. 25)	February 20
Study Day (Classes made up on Wed. April 26)	March 3
Spring Break	March 13 -17
Reading Period	April 27 - 30
Final Examination Period	May 1 - 13
Commencement	May 27

Summer Sessions 2023

Description	Date(s)
Summer Registration Begins	March 21
Memorial Day (Holiday - no classes)	May 29
Session 1	May 14 - 31
Session 2	June 1 - July 1
Juneteenth (Holiday - no classes)	June 19
Fourth of July (Holiday - no classes)	July 4
Session 3	July 3 - August 5
Session 4	August 6 - 13

SUMMER SESSION - Tentative: Dates Subject to Change

For information regarding tuition refunds, please refer to the McGeorge School of Law Refund Policy: <https://www.mcgeorge.edu/policies/withdrawal-and-refund-policy>

The calendar on this page is for the following programs.

School of Health Sciences

Master of Science in Clinical Nutrition (Sacramento)
 Entry Level Master of Science in Nursing (Sacramento)
 Master of Science in Nursing (Sacramento)
 Master of Physician Assistant Studies (Sacramento)
 Master of Social Work (Sacramento)
 Doctor of Audiology (San Francisco)
 Doctor of Occupational Therapy (Sacramento)
 Doctor of Physical Therapy (Stockton)

The Thomas J. Long School of Pharmacy

Pharmaceutical and Chemical Sciences
 PharmD

Fall 2022

Description	Date(s)
Early Registration Fall 2022 - Incoming 1st year & Graduate Students	June 8 – September 2
Payment Deadline for Fall 2022	July 31
Advanced Pharmacy Practice Experiences (APPE)	August 15
Orientation	August 17 - 19
Classes Begin	August 22
# Last Day to Add Classes	September 2
# Last Day for Pass/No Credit or Letter Grade Option	September 2
# Last Day to Drop Classes (without record of enrollment)	September 2
Labor Day (Holiday - no classes)	September 5
Census Date	October 1
Spring 2023 Schedule of Classes Available	October 3
* Advising for Spring 2023 Trimester	October 10-14
Last Day for Pro-Rated Refund	October 14
* Early Registration Appointments Begin Spring 2022 - continuing students	October 17-21
Last Day to Withdraw	October 27
Payment Deadline for Spring 2023	November 3
Thanksgiving Break	November 23 - 25
Classes Resume	November 28
Classes End	December 2
Final Examination Period	December 5 - 9
Deadline for Faculty To Submit Grades (5:00 pm)	December 13
APPEs, SHS Clinical Rotations & MPAS Courses End Date	December 16
Deadline to Submit APPEs, SHS, Clinical Rotations, & MPAS Grades (5:00 p.m.)	December 20

Spring 2023

Description	Date(s)
Payment Deadline for Spring 2023	November 3
Advanced Pharmacy Practice Experiences (APPE)	January 2
Classes Begin	January 3
# Last Day to Add Classes	January 13
# Last Day for Pass/No Credit or Letter Grade Option	January 13
# Last Day to Drop Classes (without record of enrollment)	January 13
Martin Luther King, Jr. Day (Holiday - no classes)	January 16
Summer 2023 Schedule of Classes Available	February 14
Presidents' Day (Holiday - no classes)	February 20
* Advising for Summer 2023 Trimester	February 21-25
Last Day for Pro-Rated Refund	February 22
Census Date	March 1
* Early Registration Appointments Begin Summer 2023 - continuing students	February 28 – March 6
Last Day to Withdraw	March 9
Payment Deadline for Summer	March 31
Deadline to File Application for Graduation Fall 2023/Spring 2024/Summer 2024	April 1

Application for Graduation Opens Fall 2024/Spring 2025/Summer 2025 April 2

Classes End (SHS and Pharmacy)	April 5
Final Examination Period	April 7 - 14
Deadline for Faculty to Submit Grades (5:00 pm)	April 18
APPE and SHS Clinical Rotations End Date	May 5
Deadline to Submit APPE and SHS Clinical Rotations Grades (5:00 pm)	May 9

Summer 2023

Description	Date(s)
Payment Deadline for Summer	March 31
Classes Begin	April 24
# Last Day to Add Classes	May 5
# Last Day for Pass/No Credit or Letter Grade Option	May 5
# Last Day to Drop Classes (without record of enrollment)	May 5
Last Day to Drop Classes without a record of enrollment	May 5
Pharmacy Commencement (held in Stockton)	May 13
Fall 2023 Schedule of Classes Available	May 16
SHS Commencement	May 20
*Advising for Fall 2023 Trimester	May 23 – June 2
Memorial Day Holiday	May 29
*Early Registration Appointments begin for continuing students – Fall 2023	June 2 – September 1
Last Day for Pro-Rated Refund	June 13
Juneteenth (Holiday - no classes)	June 19
Last Day to Withdraw	June 27
No Classes (Independence Day Observed)	July 4
Classes End	July 25
Final Examination Period	July 27 – August 4
Deadline for Faculty to Submit Grades (5:00 pm)	August 8
Census Date	September 1

Footnotes

- # Advisers should arrange to be available on this day
- * Limited to Currently enrolled students

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