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## 2018/2019 University of the Pacific Stockton Graduate Catalog

University of the Pacific

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UNIVERSITY OF THE  
**PACIFIC**

Stockton Graduate Catalog  
2018-2019

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# STOCKTON GRADUATE

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## Academic Divisions of the University

Arthur A. Dugoni School of Dentistry

College of the Pacific (Arts and Sciences)

Conservatory of Music

Eberhardt School of Business

Gladys L. Benerd School of Education

Graduate School

McGeorge School of Law

School of Engineering and Computer Science

School of International Studies

Thomas J. Long School of Pharmacy and Health Sciences

University College

## Accreditation

The University of the Pacific is accredited by the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges (WASC), 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 which 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. The 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:

The 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

### Preparing our students: success after graduation

University of the Pacific provides a superior, student-centered learning experience that integrates liberal arts and professional education to prepare students for lasting achievement and responsible leadership in their careers and communities.

At six months after graduation, nearly 90 percent of the Class of 2016 was employed or accepted to a graduate or professional school, completing a post-graduate internship or fellowship, or serving in a military or community service experience. In 2016, Pacific alumni salaries ranked No. 2 in California compared to similar institutions, according to the White House College Scorecard. Overall, Pacific ranked No. 7 among California's 348 colleges and universities for alumni salaries.

### Looking back: our unique history

University of the Pacific was established in 1851 as California's first chartered institution of higher learning. It was founded by pioneering Methodist ministers remains the only Methodist-related university in California. Originally located in Santa Clara, the university later moved to San Jose and, in 1924, moved to Stockton, making it the first private four-year university in the Central Valley.

An innovator and leader in higher education, Pacific provided California with its first chartered medical school in 1858, its first coeducational campus in 1871, and its first conservatory of music in 1878. It was the nation's first to offer an undergraduate teacher corps program, the first to send an entire class to an overseas campus, the first to establish a Spanish-speaking inter-American college, and the first to offer a four-year graduation guarantee.

Pacific has enjoyed extraordinary stability in administration. Pamela A. Eibeck began her service in 2009 as the sixth president since the university's move to Stockton in 1924 and the 24th since its founding in 1851.

Under the leadership of President Eibeck, Pacific continues to expand its academic offerings in Sacramento and San Francisco as guided by our strategic plan. The plan capitalizes on Pacific's highly regarded academic programs, formative student-teacher relationships and multiple locations to position Pacific as the best teaching-focused university in California.

### 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.

Pacific has added more than a dozen new academic programs across its three campuses over the last two years. Once the exclusive homes to Pacific's law and dental schools, the Sacramento and San Francisco

campuses now reach new students with graduate programs in data science, physician assistant studies, audiology, music therapy, education, public policy, and public administration. These programs help address the region's critical need for leaders in technology, health care, education, government and nonprofit sectors.

In fall 2017, the Stockton Campus will host new graduate and undergraduate programs designed to equip students for success in the digital era, including a master's in cybersecurity and Media X, a program that integrates the analysis, performance, production, marketing, and management of traditional, digital, and emerging media.

#### **Beyond academics: Pacific's community impact**

In addition to academics, Pacific is making a positive community impact across the Northern California region through tens of thousands of hours of public outreach, innovative new programs and the efforts of students, faculty and staff across the university.

For example, the Thomas J. Long School of Pharmacy and Health Sciences held its 100th Mobile Medicare Clinic and celebrated a decade of free clinics that have saved more than 5,500 Medicare recipients upwards of \$5.7 million in prescription drug costs. Since 2010, more than 3,000 of the most vulnerable and underserved in our communities have received health care services through our Virtual Dental Home program, a revolutionary new care delivery system developed by Pacific's Center for Special Care. And McGeorge's legal clinics on important topics, such as immigration law, benefit the community while preparing students through meaningful experiential learning.

#### **Our schools, majors and programs**

Pacific's nine schools and college on its three campuses offer students their choice of 80-plus majors, including 25 graduate programs and 10 accelerated program options. For example, 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)**

The College of the Pacific is the oldest and largest academic unit, encompassing 18 departments and 29 majors in the natural sciences, social sciences, humanities, and the fine and performing arts. Based upon its foundation of a rigorous liberal arts curriculum, the College champions experiential learning through undergraduate research and creative activity, fieldwork, internships, and study abroad. The College prepares graduating students to command a broad perspective in their professional careers, ready to assume the responsibilities of leadership.

#### **Conservatory of Music (1878)**

Pacific's Conservatory of Music has been delivering an outstanding music education for more than 135 years. Degree programs are offered in performance, composition, jazz, education, management, music therapy and history. Conservatory faculty artists/scholars provide a rigorous and supportive learning environment. Students have access to a recording studio, technology and composition labs. Seminars and master classes with accomplished alumni and visiting artists along with numerous performance and other experiential opportunities help prepare graduates for professions in music.

#### **Arthur A. Dugoni School of Dentistry (1896)**

The nationally renowned Arthur A. Dugoni School of Dentistry, named in honor of its dean of 28 years, is committed to providing a world-class dental education for its students and comprehensive, affordable patient care for adults and children. The Dugoni School is highly regarded for its humanistic model of education that respects the dignity

of each individual and for innovation in dental curriculum, including comprehensive patient care and competency-based education. Its programs include an accelerated year-round pre-doctoral DDS program that enables students to complete four academic years of instruction in three calendar years.

#### **McGeorge School of Law (1924)**

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 a 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 who will be tomorrow's leaders.

#### **Gladys L. Benerd School of Education (1924)**

The Benerd School of Education, named in honor of an alumna's endowed gift, has educated future professionals in learning, education, and leadership roles for more than 90 years. Benerd School faculty prepare students for service in public and private education and learning-related professions in other sectors; provide programs for current educational professionals to update and upgrade their understanding, knowledge and skills; and promote and engage in research leading to better education and learning.

#### **Thomas J. Long School of Pharmacy and Health Sciences (1955)**

The Thomas J. Long School of Pharmacy and Health Sciences is named in honor of the financial commitment of the Thomas J. Long Foundation and the Long family. The School offers a three-year accelerated pharmacy program, provides speech-language pathology students early clinical experience, prepares highly-trained audiologists and produces practice-ready physical therapists. The School is committed to creating a leadership focused, success-centered environment for its diverse student body. Students are empowered to succeed through meaningful, experiential learning in state-of-the-art laboratories. The School's programs have received continuous national accreditation.

#### **School of Engineering and Computer Science (1957)**

The School of Engineering and Computer Science empowers its students to solve problems by developing their own projects and working alongside professors on contemporary research. The School's faculty take each student's education personally and are committed to mentoring them both inside and outside of the classroom. With its distinguished cooperative education program, students also get to 'learn and earn' through a paid professional internship, 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 was renamed in 1995 in recognition of the Eberhardt family's endowed gifts. Fully accredited by the Association to Advance Collegiate Schools of Business, the School boasts a \$3 million Eberhardt Student Investment Fund, a dedicated Career Management Center, top-rated faculty, state-of-the-art classroom technology, and exceptional experiential learning opportunities. The School offers valuable leadership development and business resources through its centers and institutes, including the Center for Business and Policy Research, the Center for Entrepreneurship, the Westgate Center for Leadership and Management Development and the Institute for Family Business.

#### **School of International Studies (1987)**

A school within College of the Pacific, the School of International Studies is devoted to the interdisciplinary study of international affairs. International, interdisciplinary and intercultural immersion, acquisition of at least one second language and at least a semester of study abroad prepare students to succeed in a variety of professions in industry, government, not-for-profit organizations and educational institutions. The School's programs help students develop strong analytical reasoning ability and strengthen written and oral communication skills while building intercultural competence and personal confidence.

# GRADUATE SCHOOL

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

Phone: (209) 932-3297

Location: Stockton Campus Knoles Hall, Room 211

Thomas H Naehr, PhD, Dean of the Graduate School

## 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://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](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)

Information about TOEFL can be located online at <http://www.ets.org/toefl>; information about IELTS can be located at <http://www.ielts.org>. The University of the Pacific's TOEFL Code is 4065.

### Minimum Score for Admission:

- Internet-based TOEFL: 80
- Paper-based TOEFL: 550

- IELTS score: 6.5

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

### Minimum Score for Teaching Assistants:

- Internet-based TOEFL: 90
- Paper-based TOEFL: 577
- IELTS score: 7.0

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

# FINANCIAL ASSISTANCE

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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) (<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](mailto:financialaid@pacific.edu)

# ACADEMIC REGULATIONS

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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.

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.

## 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.

## Academic Standing

All graduate students are expected to make satisfactory progress toward the academic degree for which they were admitted. Also, graduate students are required to maintain a cumulative minimum grade point average (GPA) of 3.0 or higher in all courses listed in their graduate program plan of study and in all courses taken as a graduate student.

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.

At the end of each semester a graduate student's academic standing is determined to be one of the following:

- good standing
- good standing with warning
- probation
- subject to disqualification (temporary status)
- disqualification.

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:

*Good Standing:*

- Term GPA of 3.0 or higher and a cumulative Pacific GPA of 3.0 or higher

*Good Standing with Warning:*

- Term GPA below 3.0 and a cumulative Pacific GPA of 3.0 or higher

*Probation:*

Any graduate student who has completed six (6) or more course units of study and has a Pacific cumulative GPA below 3.0 is placed on academic probation. Students on academic probation who fail to raise their Pacific cumulative grade point average to 3.0 at the end of the probationary semester are subject to disqualification from their Graduate program. Students who are subject to disqualification are reviewed by an appropriate committee and are either disqualified from further enrollment at the University or are allowed to continue for the next semester on probation.

If prior semester is Good Standing, or Good Standing with Warning

- Term GPA below 3.0 and cumulative Pacific GPA is 3.0 or below

*Subject to Disqualification (Temporary Status):*

If prior semester is Probation:

- Term GPA below 3.0 and cumulative Pacific GPA is 3.0 or below

*Disqualified:*

Each school determines whether a student subject to disqualification will be disqualified. If they are not disqualified, the student subject to disqualification is then put on probation for the following term. If they are disqualified, a student is not allowed to register for further study at the University.

A student who has been disqualified may appeal immediately for reconsideration and possible reinstatement on probation, within the

same school. A disqualified student who has been out of the university for one semester or more may apply for readmission to the university through the Office of Graduate Studies. If readmitted, such a student enters on probation and would need to make up the earlier deficiency in order to attain good academic standing.

Any graduate student who receives more than two C grades or lower will have their academic progress reviewed by the department and the Office of Graduate Studies and they may be dismissed from their Graduate program.

In addition to maintaining a 3.0 average, graduate students must make satisfactory progress in their degree programs. Students are expected to make continual progress toward completing course requirements and any required research, qualifying examinations, thesis or dissertation writing, and all other University or Departmental requirements. Failure to make satisfactory progress can result in dismissal from the Graduate program. Students who wish to appeal a disqualification must submit a written petition to the Dean of Research and Graduate Studies.

Other academic and non-academic reasons can result in a student's dismissal from a graduate program. Refer to the Honor Code in Tiger Lore, and any program-specific guidelines.

## 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 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.

## Course Loads

Course load requirements are program-specific. The following are guidelines for non-lockstep programs. Course loads influences financial aid. The following course load categories correspond to financial aid categories.

- Full Time: 8 or more units a semester
- Half Time: 7 to 4 units a semester
- Less than Half Time: 3 to 1 units a 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.

## Credit Limitations

All courses countable for graduate degree credit must be either graduate-level courses (200 or 300 level) or, where allowable, advanced undergraduate courses (100 level). Students taking 100-level courses for graduate credit will be required to complete extra course assignments.

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

## Double-Listed Courses

In order to differentiate graduate and undergraduate responsibilities in double-listed courses (100/200 levels), there must be sufficient differentiation between the two levels with the graduate level evidencing additional rigor as denoted by higher level student learning outcomes with corresponding assignments and grading criteria. Graduate students must register using the 200-level course number.

## 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

### 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 by no later than the following deadlines: for fall semester, by July 1 following; for spring semester, by November 1 following; for summer term, by January 1 following. If work is not completed within these stipulated times, 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.

## Repeating of Courses and Grade Replacement Policy

For courses in which the grade earned is C- or lower, the units are counted 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 "C-" or lower can be repeated. Once a course is completed with a grade of C 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. Grades are averaged when courses are repeated; thus, the Pacific grade point average does reflect the two grades averaged.

## Acquisition of Graduate Credit as an Undergraduate

Undergraduate students meeting all of the following requirements may petition the Dean of the Graduate School 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.

## 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.

- 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.

## 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 add or 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.

## Continuous Registration

All graduate students in graduate degree or credential programs must satisfy the Continuous Registration Policy of their respective programs from 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.

Continuous registration is intended for students who have completed all required coursework. The Continuous Registration Policy can be met by registering for GRAD 200 (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; however, Pacific's Residency and Time Limit policies must be met.

Students enrolled in GRAD 200 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 may cause existing student loans to come due.

Some programs may require courses other than GRAD 200 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 the program by submitting a \$50 reinstatement fee and the Application to Request Reinstatement to the Graduate School prior to the first day of classes.

After 12 months or more in inactive status, students who wish to re-enter a program must complete a new application with the appropriate fees and documentation. A decision to readmit a former student must include a statement by the admitting degree program what previously taken courses can be applied to the new program of study.

## Registration - Individualized Study

To register for an 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.

## Changing Degree Programs

If a student wishes to change a degree program, the student must submit an 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.

## 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 Graduate Dean. 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 student 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.

## Requirements for the Master's degree

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

### Total Units

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

### 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. Students enrolled in the Master of Physician Assistant Studies program, should refer to the program's GPA policies.

### 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 these defense/final examination occurs.

(See individual program sections for more information).

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

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 addition to earning a terminal degree, candidates must successfully complete all 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.

### 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 or
2. a work of original and primary research.

### Passing of a 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": i.e., the candidate 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, the Dean of the school/college at which the degree is offered, and the Graduate Dean are required. See revalidation process below.

### 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 Graduate Dean.

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

If revalidation 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 3-5 page essay, a project, 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, the School/College Dean, and the Graduate 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. Courses must have been completed at this university to be eligible for revalidation.

Individual programs may have additional residency and time limit requirements.

## 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 must hold a degree equivalent to the degree being sought 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 and the Graduate 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 equivalent to the degree being sought or have demonstrated expertise. 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 completing the Masters' Thesis Committee form or the Doctoral

Dissertation Committee form. Upon the approval of thesis or dissertation advisor, department chair, and college or school dean, the form will be forwarded to the Graduate School. Committee members from outside the University of the Pacific must be approved by the Graduate 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.

## Thesis and Dissertations

The Graduate School 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. These courses are numbered 299 (Master's Thesis) and 399 (Dissertation), and are graded on a Pass/No Credit basis.

## Commencement

Master's degree students who are near completion of degree requirements are eligible to participate in the May commencement exercises under specific conditions. The following conditions must be met before the Graduate Dean will approve the petition.

- A completed Petition to Participate in Graduation Ceremonies has been submitted to the Graduate School by the Spring semester deadline\* for filing the Application for Graduation form. This petition must be signed by the student's advisor and academic Dean (or Graduate Program Director if appropriate).
- All degree requirements will be met before the end of the 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 in the Graduate School before the Spring semester deadline for filing the Application for Graduation form.\*
- 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 after the Fall semester of the same calendar year. Approved CAPP 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 by the Graduate School. 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.

## **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 in the 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, it 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. If a student only withdraws from a semester, he/she has one more semester to keep his/her continuing active status. If the student has completely withdrawn from the University, he/she must submit a new application for admission, and file a request for Petition for Reinstatement Form (with a \$50 fee) available on the Office of the Registrar web site. The deadline is August 1st for Fall admission or December 1st for Spring admissions.

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

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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 Gladys L. Benerd School of Education, Thomas J. Long School of Pharmacy and Health Sciences, 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 food studies, 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 Brubeck Collection, containing the papers, music and memorabilia of jazz icon Dave Brubeck and his wife Iola; 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 and Health Sciences 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) (<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

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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 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](mailto:dnuss@pacific.edu)

More detailed information as well as our Policy Manual for Students with Disabilities is available on the web at: <http://www.pacific.edu/Campus-Life/Student-Services/Disabilities-and-Testing-services.html>

# STUDENT HOUSING

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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 freshmen and sophomores only. Upper-division and Graduate students are considered on space availability.

## Residence Halls

A majority of the rooms are double occupancy and are reserved for incoming freshmen and sophomore students. A limited number of single rooms are available to students at extra cost; medical documentation is required for placement. Assignment requests to single rooms and other accommodations are not guaranteed.

Students who live in the residence halls are required to take one of the three meal options: the Platinum level plan (4,634 Dining Points per year), the Gold level plan (4,334 Dining Points per year), or the Silver level plan (3,974 Dining Points per year). Dining points are subject to change.

## Apartments

The University maintains five apartment complexes on our Stockton campus. All students who live in the apartments must be on at least a Bronze level meal plan (1,446 Dining Points per year). Apartment residents also have the option to purchase a Copper level meal plan (2,972 Dining Points per year), Silver level meal plan, Gold level meal plan, or Platinum level meal plan.

The **University Townhouse Apartments** on the north campus have one- and two-bedroom apartments for students. The University's newest apartment complexes, known as **Monagan and Chan Family Halls**, 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. The **McCaffrey Center** apartments are three bedroom, one-bath units which are located at the center of campus. The furnished three-person apartments are reserved for juniors and seniors. The McCaffrey Center complex is the hub of daily student activity such as the ASUOP student government offices, The Grove campus convenience store, and the Janet Leigh Theatre.

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

**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.

## 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](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>

# HEALTH SERVICES

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

Phone: 209-946-2315

Location: Cowell Wellness Center

Pacific Health Services 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. Pacific Health Services provides staff practitioners which include a supervising physician, certified nurse practitioners and a registered dietitian. Students are provided with health education and wellness information as well as health care during illness in order to promote the skills and attitudes necessary for students to become responsible for their own health.

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 Pacific Health Services 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. .

All Stockton students taking 8 units or more are automatically charged a Cowell Wellness Center Fee fee of \$120 per semester.

Pacific Health Services are available to students who have:

1. Registered for classes at the Stockton, Sacramento or/and San Francisco campus
2. Paid the Cowell Wellness Center Fee and
3. Submitted the required health history form and immunization record.

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

Cowell Wellness Center Fee includes:

- Physician appointments (Stockton only)
- Nurse Practitioner services
- Dietitian services
- Health and wellness management
- Counseling appointments

Cowell Wellness Center Fees do not cover the cost of some procedures, medications, and outside referrals. Students are required to have health insurance. If students do not have insurance coverage a student plan is available through the University. The coverage period runs from August 1st to July 31st or students can choose to enroll on a semester-by-semester basis. Students can access information about the plan via the Internet: <http://www.pacific.edu/insuranceoffice> or call Pacific Health Services (209) 946-2315 for assistance.

*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>*

# 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 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 its mission by its core values of humanism, innovation, leadership, reflection, stewardship, collaboration, and philanthropy.

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.

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; a post-doctoral residency program in oral and maxillofacial surgery that leads to a certificate; 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.

## Mission

The mission of the School of Dentistry is to:

- Prepare oral healthcare providers for scientifically based practice
- Define new standards for education
- Provide patient-centered care
- Discover and disseminate knowledge
- Actualize individual potential
- Develop and promote policies addressing the needs of society

The values listed below support the defining characteristic of the school's educational model: humanism.

- Courage: willing to take risks, doing what is right, not easy
- Empowerment: supporting and inspiring individuals to fulfill their potential
- Excellence: achieving the highest quality in all that we do
- Innovation: imagining and applying bold, creative approaches
- Integrity: exemplifying the highest personal and professional ethical principles

- Leadership: inspiring through vision and challenging others to effect positive change

## Curriculum

Basic biomedical, pre-clinical, and clinical subjects are combined with applied behavioral sciences in an integrated, multi-disciplinary program that prepares graduates to provide quality care to the public and to enter a changing world that requires them to supplement and adapt existing knowledge, skills, and technology. The 36-month curriculum that leads to the degree of Doctor of Dental Surgery begins in July and is divided into 12 quarters, each consisting of 10 weeks of instruction, one week of examinations, and a vacation period of between one and four weeks.

During the first quarter, students practice use of dental instruments and materials, develop a working position and posture that uses direct and indirect vision, and hone basic dental hand skills. Integrated biomedical science instruction in anatomy, biochemistry, physiology, pharmacology, and microbiology is offered in the first eight quarters, followed by multi-disciplinary, integrated presentations of basic science foundations for clinical topics such as the importance of saliva, tissue aging, nutrition, and infection control. Throughout the program, students apply basic sciences foundational knowledge to clinical problems using the scientific method of inquiry.

Integrated pre-clinical instruction takes place in the first four quarters with students learning to work from a seated position in the preclinical simulation clinic and with a chair-side assistant in conjunction with pediatric dental practice. Clinical work with patients is initiated in the fifth quarter.

The school's comprehensive patient care philosophy is based on the concept of private dental practice where the student assumes responsibility for assigned patients' treatment, consultation, and referral for specialty care. Second-year students practice clinical dentistry 15 hours per week; during the third year the number of clinical hours increases to 27 per week (evening clinic appointments supplement patient care opportunities and are available to second- and third-year students). In the clinic, students learn to provide comprehensive dental care under the direction of a Group Practice Leader and multi-disciplinary faculty from diagnostic sciences, periodontics, restorative dentistry, endodontics, orthodontics, and removable prosthodontics. Oral and maxillofacial surgery, pediatric dentistry, and radiology are learned in respective specialty clinics. Students participate with faculty and orthodontic residents in adjunctive orthodontic care and oral development clinics.

Advanced clinical dentistry and evaluation of new developments and topics that involve several disciplines are learned in the third-year in conjunction with patient care. Second- and third-year students participate in 90 hours of patient care clinics located in treatment facilities in Northern California that includes hospitals, community clinics, and skilled nursing facilities. At extramural clinic sites students are supervised by Pacific faculty in conditions that more closely resemble private practice. Students typically treat 4-6 patients per day. Rotations at these sites occur weekdays during the academic year, weekends, and vacation periods. Students typically find these experiences highly educational, and learn how to provide patient care in a more condensed time-frame.

Behavioral science aspects of human and practice management, critical thinking, ethics, and dental jurisprudence are woven throughout the curriculum. Epidemiology and demography of the older population, basic

processes of aging and dental management of hospitalized patients, geriatric patients and those with the most common disabling conditions are studied in the third year.

Students are counseled individually with regard to establishing a practice and applying for postgraduate education. A weekend conference devoted to new developments in dentistry serves to acquaint students with opportunities for postgraduate education and with alumni views of the realities of dental practice.

## Admission Requirements

Basic requirements for admission to the course of study that leads to the degree of Doctor of Dental Surgery: completion of required pre-dental education, minimum 40 hours of dental shadowing experience, completion of the Dental Admission Test (DAT), submission of complete application materials through the American Dental Education Association's Application Service (AADSAS), and appearance at the school for a personal interview.

The Dugoni School utilizes a holistic application review process where it considers not only an applicant's academic performance, GPA and DAT scores, but also personal characteristics, leadership/life experiences, extra-curricular activities, and potential for academic, clinical, and professional success as determined by the admissions interview and information provided in the AADSAS application.

Pre-dental education must be completed at a college or university from which subject matter is accepted for credit toward advanced standing at University of the Pacific or universities with equal standing. At least three years of collegiate work, including 135 quarter or 90 semester units, is recommended. Courses from a community college are acceptable if they are transferable as equivalent to pre-dental courses at a four-year college.

Students are encouraged to develop their course of study with the assistance of a pre-dental advisor. Pre-dental advisors can identify courses that meet School of Dentistry requirements and help prepare individuals for the rigors of professional education and practice. They are also aware of courses that would best prepare a student for competitive scores on the Dental Admission Test (DAT).

## Number of Required Pre-dental Courses

Biological Sciences with Laboratory*	4
General Physics with Laboratory	2
Inorganic Chemistry with Laboratory	2
Organic Chemistry*	2
English Composition, Communication or Speech **	2

\* Predental students are advised to complete one course in anatomy or physiology as part of the biological sciences requirement. The admissions committee requires applicants to complete two semesters of organic chemistry or, upon direction of the predental advisor, one semester each of organic chemistry and biochemistry.

\*\* One course in composition or technical writing is required. Other courses should develop written or verbal communication skills. Courses in English as a Second Language (ESL) do not meet this requirement.

Pass/Fail evaluations in required subjects are unacceptable unless accompanied by a narrative transcript provided by the awarding school.

Although it is recommended that applicants have a baccalaureate degree, no specific major is required or preferred. Upper-division courses that extend knowledge of required subjects and/or those in areas such

as economics, computer science, business administration and the humanities are recommended.

## The Dental Admission Test

The DAT is available year round at testing centers around the country. To be considered for admissions, the exam must have been taken within 24 months of the date of the application. Information and applications are available from the Dental Admission Test Program, Division of Education, American Dental Association at 800-621-8099 or online at [www.ada.org](http://www.ada.org) (<http://www.ada.org>).

## Dental Shadowing and Research Experience

Applicants are required to have a minimum of 40 hours of dental shadowing experience. Research is not required for admission, but strongly recommended.

## Application Materials

The School of Dentistry participates in the American Association of Dental Schools Application Service (AADSAS). AADSAS is an information clearinghouse which transmits to a dental school the biographical and academic data required by admission committees, thereby relieving the applicant of the burden of completing multiple and repetitious individual applications. All AADSAS applicants must submit an online application at the ADEA web site, [www.adea.org/aadsas](http://www.adea.org/aadsas) (<http://www.adea.org/aadsas>).

You will need to read/complete the following sections of the AADSAS application:

1. Fee Assistance Program (optional),
2. Add Programs, Submit Application and Check Status tabs,
3. Personal Information,
4. Academic History,
5. Supporting Information, and
6. Program Materials.

You will need to submit the following documents:

1. Official transcripts from each college and university attended\*
2. Three letters of evaluation

Payment for the ADEA AADSAS application is by credit card (VISA, MasterCard, American Express or Discover) only.

Completed application materials must be received by AADSAS no later than February 1 for an applicant to be considered for the class entering in July; however, it is recommended that students apply as early as June. A nonrefundable fee of \$75 is required by the school before the processing of an application is initiated. The University of the Pacific does not require any secondary application.

\* If the applicant's undergraduate institution has a pre-health science advisory committee, a committee evaluation is recommended. Otherwise, three letters of evaluation are required, two of which should come from predental or upper division science course professors. At the applicant's discretion, up to two additional letters may be submitted if these provide supplemental information regarding the applicant's character, special abilities, and professional motivation. Evaluations from health care professionals who know the applicant well are encouraged.

## Personal Interview

Applicants whose credentials appear to meet pre-dental requirements may be invited to the school for an interview with one or more members of the Admissions Committee and a current dental student. Applicants

selected for interview are notified by phone of available dates for the interview. During the interview the applicant's interest in dentistry, future plans, maturity, critical thinking, emotional intelligence and personal qualities needed for successful work with patients are assessed. In addition, applicants participate in an orientation seminar, meet informally with current students and tour the school.

## Selection Factors

The Admissions Committee carefully considers each applicant's scholastic record, scores on the DAT, personal statement, letters of evaluation, evidence of manual dexterity (including the perceptual ability portion of the DAT), other personal attributes and qualities as well as demonstration of his or her understanding about a career in the dental profession. Applicants who are offered the opportunity to enroll must complete planned coursework at a specified performance level.

The Admissions Committee has a firm policy of not discriminating against any applicant because of age, creed, national or ethnic origin, marital status, race, color, gender or sexual orientation. Established review procedures ensure applicants an equal opportunity to be considered for admission.

## Accelerated Programs

In cooperation with College of the Pacific, the School of Dentistry offers three accelerated programs for incoming university freshmen. The programs were initiated in 1984 and have been refined over the years.

### Five-Year Program Leading to a DDS Degree (2+3)

This program provides the minimum foundation in pre-dental education through two years of study on the Stockton campus for a select group of highly qualified students. Students admitted to the program take a prescribed list of general education and science courses as undergraduates in College of the Pacific. After two years of study, students are evaluated for admission to the School of Dentistry. Freshmen who meet the following criteria will be considered for admission to this highly selective program.

1. An ACT composite score of 31 or a combined SAT Critical Reading and Math score of 1350 with a minimum Critical Reading score of 630.
2. A minimum 3.7 grade point average (on a 4.0 scale) based on a substantial number of math and science courses in a college preparatory program.
3. Acceptable scores on the Pacific fundamental skills tests in reading, writing, and quantitative analysis administered upon entering the University.

### Six Year Program Leading to a BA or BS Degree and a DDS Degree (3+3)

Students may be admitted into a selective six year program of study. Those accepted into the program major in biological sciences or chemistry and obtain a Bachelor of Science or Arts in Biological Sciences or a Bachelor of Arts in Chemistry from College of the Pacific after three years on the Stockton campus and one year at the School of Dentistry. This special opportunity, combined with the 36-month accelerated program of the School of Dentistry, makes possible the completion of all requirements for both the Bachelor of Science or Arts degree and the Doctor of Dental Surgery degree in a total of six years. Students must meet the following criteria in order to be considered for the program.

1. An ACT composite score of 31 or a combined SAT Critical Reading and Math score of 1350 with a minimum Critical Reading score of 630.

2. A minimum 3.6 grade point average (on a 4.0 scale) in a solid college preparatory program.
3. Substantial coursework in English, sciences and mathematics.

### Seven-Year Program Leading to a BA or BS Degree and a DDS Degree (4+3)

This program is designed to provide students with the opportunity to spend four years earning a bachelor's degree in any discipline, and then complete their dental education at the School of Dentistry. Students benefit by knowing early in their careers that they are granted an interview to the School of Dentistry provided they meet the requirements outlined in their pre-dental program acceptance letter. Students admitted to this program can major in any subject, but must complete a series of science courses as prescribed by a pre-dental advisor. Freshmen applying for the program should meet the following guidelines:

1. An ACT composite score of 27 or a combined SAT Critical Reading and Math of 1210 with a minimum Critical Reading score of 600.
2. A minimum 3.5 grade point average (on a 4.0 scale) in a solid college preparatory program.
3. Substantial coursework in English, sciences, and mathematics.

## School of Dentistry Expectations for Admission

To be admitted to the School of Dentistry, accelerated students must:

1. meet all course requirements for the pre-dental programs, including Grade Point Average standards;
2. achieve scores of 18 or above in all categories on the Dental Admission Test (DAT);
3. successfully complete an interview at the School of Dentistry;
4. file a competitive and complete AADSAS application by September 1;
5. submit the \$75 application fee; and
6. obtain at least three letters of evaluation from science faculty, including one from a pre-dental faculty advisor.

## Graduate Orthodontic Program

The advanced education program in orthodontics began in 1971. Classes begin each July for the 27-month program. Instruction prepares the residents to provide superior treatment based on contemporary biologic orthodontic principles and is recognized for education eligibility by the American Board of Orthodontics.

Didactic courses include principles of orthodontics, cephalometrics and 3D imaging and airway consideration, facial growth, biomechanics, craniofacial biology, cleft lip and palate, research methodology, appliance laboratory, pediatrics, statistics, anatomy, bone biology and clinical use of temporary anchorage device, TMD, orthognathic surgery, restorative-orthodontic relationships, practice management, and periodontic/orthodontic care. The faculty fosters a collegial atmosphere and mutual respect between residents and faculty.

Clinical instruction and practice are conducted in the school's orthodontic clinic in six half-day clinics per week which include treatment for children, adolescents, adults, and multidisciplinary (integrated with periodontal and restorative procedures) patients. Adult patients constitute about one fourth of a student's caseload. Each resident starts approximately 40 to 50 new patients and 50 to 70 transfer patients during the residency program. Residents are also rotated through the Children's Hospital Oakland Craniofacial Panel. Fixed appliance treatment employs the edgewise technique, although instruction permits a wide

latitude of clinical variation based on patient needs and special faculty expertise. Experience in treating the entire range of orthodontic problems is provided. Each resident also starts several micro-implant anchorage supported patients. From 1998 to 2002 the orthodontic department was the initial testing site for the new Invisalign technology, and today provides a state-of-the-art approach to treating a wide variety of patients with Invisalign. Each resident generally starts 6 to 8 patients with this appliance.

Each resident engages in a research project and completes a thesis to qualify for the Master of Science in Dentistry degree. These are submitted for publication in scientific journals.

Residents are scheduled for didactic and clinical instruction five full days per week, and full participation is required. While there is no prohibition of weekend private dental practice, students' commitments during the program seriously limit this opportunity.

## International Dental Studies Program

Through the Division of International Dental Studies (IDS), the opportunity to earn the Doctor of Dental Surgery degree is available to qualified graduates of foreign dental programs. This 24-month, eight-quarter program provides practical and comprehensive training in dental technique as practiced in the United States. The program's admission process is described more fully on the school website. For additional information you may also contact the IDS program at:

University of the Pacific, Arthur A. Dugoni School of Dentistry  
155 Fifth Street  
San Francisco, CA 94103, U.S.A.  
Phone: (415) 929-6428/929-6688  
Email: IDS@pacific.edu

The IDS curriculum includes pre-clinical and clinical instruction in dental subjects presented in the traditional DDS program, as well as instruction in clinical pharmacology and pathology, differential diagnosis of oral diseases, facial pain, special needs patients, hospital dentistry, and preparation for regional and state licensure; the behavioral sciences include basic management science, introduction to geriatric dentistry, fundamentals of dental practice, and jurisprudence. IDS students begin clinical patient care in the second quarter and spend the greater portion of their second year in clinical practice.

Basic required documentation for admission consideration is as follows:

1. copy of a dental degree from a foreign dental school (any degree in a language other than English must be accompanied by a certified translation from a bona fide U.S. translator);
2. copy of successful completion of Parts I & 2 of the National Dental Board Examination (NBDE-1, NBDE-2);
3. copy of a score of 92 or above on the internet-based or 580 or above on the paper-based version of the Test of English as Foreign Language (TOEFL); and if applicable, an English proficiency examination will be administered at the School of Dentistry;
4. copy of a course-by-course transcript evaluation from Educational Credential Evaluators (ECE) with a minimum US Grade Point Average of 2.0;
5. copies of two recent letters of recommendation;
6. copy of a curriculum vitae (CV) that describes the applicant's dental experience and additional academic accomplishments since receiving the initial dental degree.

Provisional degrees are not accepted.

The IDS admissions committee considers the following factors in selecting applicants for admission: dental school achievement, scores on the National Dental Board Examination Parts-1 & 2, English language proficiency, professional experience and advanced degrees. Applicants invited to the technique exam and interview are selected from those who meet preliminary admissions requirements.

Applications must be made through ADEA Centralized Application for Advanced Placement for International Dentists (CAAPID) at <http://www.adea.org/caapidapp/>.

## Advanced Education in General Dentistry Program

The AEGD program is a one-year, accredited postgraduate residency in general dentistry offered in Union City, approximately 35 miles southeast of San Francisco. The core of the program involves advanced clinical treatment of patients that require comprehensive general dental care. There is a comprehensive seminar series attended by residents at both sites that covers all dental specialties. The residents provide dental care to people with complex medical, physical, and psychological situations.

AEGD residents provide comprehensive dental care, attend supplemental seminars and rotations, and supervise dental and dental hygiene students. Hospital dentistry education and experience is part of the program curriculum. Residents are directly involved in the clinical education of dental and dental hygiene students, which gives residents a unique teaching experience.

The AEGD program offers the opportunity to gain more in-depth training in an optional accredited second-year residency training program. The optional second year allows greater flexibility to pursue individual interests, advanced clinical cases, teaching, or research projects.

The start date for the program is July 1. Residents have time off during the school's winter holiday break and 10 days discretionary leave.

There is no tuition for participation in the AEGD program. Residents receive an educational stipend. The program uses the American Dental Education Association's PASS application to receive application materials. For on-line information about Pacific's AEGD Program application process, please visit our site on the Web at <http://www.dental.pacific.edu>. Follow the links to Academic Program, and Advanced Education in General Dentistry; Application Process.

In addition to the two-year program, the AEGD Global Scholar Program is a unique, collaborative five-year program with the Gladys L. Benerd School of Education for foreign-trained dentists interested in advanced training in general dentistry and in becoming more proficient educators. Candidates must be sponsored by a qualified dental school abroad and agree to become educators at their home dental school upon completion. Successful candidates earn an AEGD certificate following each of the first two years and a masters or doctoral degree in education upon completion.

## Oral and Maxillofacial Surgery Residency Program

The School of Dentistry offers a residency program in oral and maxillofacial surgery at the Alameda County Medical Center/Highland Hospital in Oakland, California. The program has been in place since 1926, and in 2001 became affiliated with the University of the Pacific. The program is fully accredited by the Commission on Dental Accreditation. Upon completion of the program residents are prepared to practice the

full scope of oral and maxillofacial surgery and are eligible to apply for certification by the American Board of Oral and Maxillofacial Surgery.

Residents are educated in the basic sciences, including anatomy, pathology, pharmacology, and physiology. Clinical practice includes dentoalveolar surgery, comprehensive management of the implant patient, comprehensive management of dentofacial and craniofacial deformities, surgical management of pathologic lesions, temporomandibular joint surgery, aesthetic surgery, reconstructive surgery and management of cleft lip and palate, and trauma management.

There are several hospitals and clinics to which residents are assigned during training, including Highland Hospital, Kaiser Hospital in Oakland, Oakland Children's Hospital, and the University of the Pacific School of Dentistry clinics. One of the program's most distinctive characteristics is the large volume and variety of clinical experience.

The residency lasts 48 months, and is made up of 30 months of oral and maxillofacial surgery, and 18 months of medical rotations including medicine, surgery, plastic surgery, oral pathology, and anesthesiology as well as electives in various surgical or medical subspecialties.

A dental degree is prerequisite to apply to the program. A candidate must submit an application package including a completed PASS application and three letters of recommendation. University of the Pacific/Highland participates in the National Matching Service.

## **Endodontology Residency Program**

Endodontic residents participate in a comprehensive 27-month program designed to provide in-depth clinical training in endodontics, supported by a solid foundation of coursework in the biologic principles that uphold the specialty. In addition to a curriculum that nurtures the clinician-scientist, the program offers clinical experiences with an extensive patient demographic supported by the School of Dentistry and a community dental clinic that is part of an expansive health care network in the East San Francisco Bay Area. Each resident will also engage in an investigative project and complete an acceptable thesis to qualify for the Master of Science in Dentistry degree. The thesis is typically submitted for publication in scientific journals. Classes begin each July. Residents are scheduled for classroom and clinical instruction five full days (and some evenings) per week and full participation is required.

The graduate program in endodontology is fully accredited by the Commission on Dental Accreditation.

More information on the program, including admissions requirements, curriculum and schedule, graduation and certification requirements are available here (<http://dental.pacific.edu/academic-programs/residency-and-graduate-programs/advanced-education-program-in-endodontology>).

# 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

Gesine Gerhard, Associate Dean and Director of General Education

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 Food Studies

#### Master of Arts in Psychology

#### Master of Arts in Health, Exercise and Sport Sciences

- Sport Pedagogy
- Sports Medicine
- Sport Management
- Athletic Training

#### Master of Science in Athletic Training

#### 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 129. Histology Online. 3 Units.

This is a non-lab, online version of BIOL 128. Credit is only given once for BIOL 128 or BIOL 129. Prerequisites: BIOL 051 and BIOL 061. Recommended: BIOL 101.

### 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 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 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 158. Computerized Data Acquisition. 4 Units.**

This lecture and laboratory course introduces students to experimental design and protocol. Students are trained in the programming and use of the computer data acquisition program LabVIEW, then apply the program to an intensive, team-based research project studying amphibian reproductive behavior. The class ends with a symposium-style presentation of each team's experiments and results. Prerequisites: BIOL 051 and BIOL 061.

**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 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 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 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 182. Medical Endocrinology. 4 Units.**

This lecture and laboratory course presents the fundamentals and current topics in human endocrinology. The subject is examined from a medical and clinical perspective, including "virtual" patients. Prerequisites: BIOL 051, BIOL 061, BIOL 101; CHEM 025 and CHEM 027. Recommended: BIOL 071 and BIOL 081.

**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.**

This lecture/discussion course focuses on the bidirectional interactions between an animal's behaviors and its endocrine system. Topics include: overview of the vertebrate endocrine system, courtship and sex behaviors, parenting behavior, pheromonal communication, aggression and other social behaviors, learning and memory, hunger, stress, and biological rhythms. Prerequisites: BIOL 051, BIOL 061, BIOL 101.

**BIOL 191. Independent Study. 2-4 Units.****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 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 279. Evolution. 4 Units.**

This course content is the same as BIOL 179 and a special project is required. Graduate standing.

**BIOL 291. Independent Study. 2 or 4 Units.****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. 4 Units.**

Practical and theoretical application of audio and video production techniques are covered in this course with an emphasis on aesthetic qualities of sight and sound productions. Some work involves student media facilities. A Lab fee is required. Prerequisite: COMM 031 or permission of instructor. (FILM)

**COMM 132. Writing for Media. 4 Units.**

Examination and production of electronic and print writing techniques are studied in this course with an emphasis on writing news, information, and entertainment messages for the electronic and print industries. Some work involves student media facilities. A lab fee is required. Prerequisite: COMM 031.

**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.**

Principles and methods of public relations are discussed and analyzed. Study of the mass media as publicity channels acquaints the students with the nature of the media, its limitations, and uses. Case studies involve students in practical application of public relations activities. Prerequisite: COMM 031.

**COMM 137. Public Relations Case Studies and Problems. 4 Units.**

This is an advanced course in public relations. The course engages students in case study research and application of public relations principles. There is both written and oral presentations with adherence to professional standards of excellence. Prerequisite: COMM 135.

**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 143. Intercultural Communication. 4 Units.**

This course analyzes the major variables affecting interpersonal communication between persons of different cultural backgrounds. (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. The Capstone. 4 Units.**

This senior level capstone seminar devoted to expanding and applying communication course concepts that students have learned in the communication major and applying this knowledge to contemporary communication issues. Students undertake research projects and employ a variety of communication methodologies and theories to uncover the social, historical and ethical implications of their chosen communication interest. This course is designed to foster and promote communication competence, including analytic capacity, media literacy and ability to identify ethical issues in communication. Preparation for future professional work and development are explored. Senior standing.

**COMM 151. Community Based Learning. 2 Units.**

This senior-level capstone course provides students with a supervised learning experience in an off-campus, community-based organization. Students apply their knowledge of communication theories and skills to the needs of local organizations, which allows them to contribute to the public good. 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 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 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 100. Introduction to Research in Health, Exercise and Sport Sciences. 3 Units.**

This class is designed to develop research skills specific to the fields within health, exercise and sport sciences. Students learn to collect, review, synthesize and critically analyze scholarly research. Students are also able to create research questions and establish hypotheses, and they are supposed to a variety of data collection methods. In addition, students learn to apply appropriate techniques to interpret data and apply the results in health, exercise, and sport settings. The intention of this course is to develop analytical skills to enable to the student to conduct and evaluate ethical research in your chosen field.

**HESP 101. Sport Data and Analytics. 4 Units.**

Sport analytics refers to the use of data and quantitative methods to measure performance and make decisions to gain advantage in the sport industry. This course aims to explore recent trends in sport analytics from a practical point of view, offering students 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.

**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 120. Instructional Strategies and Methods of Teaching and Coaching. 4 Units.**

This course is designed for the future physical educator or coach to deliver an effective, meaningful physical education curriculum to a diverse population of students. Emphasis is on physical education pedagogy; the skills and techniques that successful teachers use to ensure student learning. Students engage in guided teaching and systematic observation experiences at the primary and secondary school levels in an effort to introduce them to effective teaching and coaching behaviors.

**HESP 121. Analysis of Team and Individual Sports. 3 Units.**

This is an applied motor learning approach to skill acquisition for team and Individual sports. In addition to personal skill development, students learn to prepare the introduction, explanation and demonstration of sports skills; develop and maintain skill levels through practice and reinforcement; analyze movement by systematically observing performance; utilize biomechanical concepts to analyze, correct and enhance performance and cognitive processes to improve performance. Ten to 15 different team and individual sports are presented and instruction time per sport varies. Lab fee required.

**HESP 123. Analysis of Nontraditional Games and Sports. 3 Units.**

This is an applied motor learning approach to skill acquisition for nontraditional games and sports. A variety of nontraditional games and outdoor activities embedded in the CA curriculum framework for physical education. Clinical experience is provided for secondary students in the community. Eight to 10 different nontraditional games and sports are presented and instruction time per sport varies. Lab fee required.

**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. Kinesiology. 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. Exercise 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 139. Exercise Psychology. 4 Units.**

This course employs the theories and methods of psychology to examine the related fields of competitive sports, fitness, exercise, and rehabilitation from injury. Major questions addressed in the course include: How do psychological factors influence participation in physical activity and performance of the individual? How does participation in physical activity or incapacity due to an injury affect the psychological make-up of the individual? These questions are explored from educational, coaching, research, and clinical perspectives.

**HESP 141. Sport, Culture and U.S. Society. 4 Units.**

This course is designed to explore the relationship between sport, culture and society in both the USA and the broader global world. Students learn to critically examine a wide range of topics that include, but not limited to, sport and gender, sport and race, global sports worlds, drugs and violence in sport, sport and politics and the crime-sport nexus. The intention of this course is to develop the student's sociological imagination and encourage the student to think critically about the role sport plays in the development of societies, ideologies and everyday life. (DVSY, ETHC, GE1B, GEND)

**HESP 142. Sport and Globalization. 3 Units.**

This course examines the interaction between sport and globalization. Globalization and its underlying forces are explored as well as the manner in which sport and these global forces interact. The course then explores the structure, governance, and politics of global sport. Special attention is given to the processes that facilitate and impede globalization and the role sport plays in both. The course also extensively covers the consequences resulting from the reciprocal relationship between sport and globalization.

**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 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 152. Secondary Physical Education. 4 Units.**

This course is designed for junior/senior level students in the Sport Sciences/Sport Pedagogy concentration to deliver an effective, meaningful physical education curriculum to diverse students. This course covers curriculum components that include content, content organization, distinctive curriculum models and aspects of curriculum application. Students learn how to sustain a positive learning experience, conceive and plan meaningful curricula for school based instruction, and link the school program to opportunities for adolescents outside of school. Prerequisites: HESP 121, HESP 123, HESP 151.

**HESP 153. Adapted Physical Education and Sport. 4 Units.**

This course is designed to provide students with the theoretical and practical tools necessary to teach Physical Education (PE) and Sport across diverse settings. Students learn a wide range of teaching skills that facilitate their ability to create an inclusive learning environment in PE and Sport. Students explore a variety of adapted motor skills activities, federal/state legislative mandates and related policies, effective pedagogical and assessment strategies, classroom management skills, the use of constructive feedback and the development of appropriate student learning outcomes within diverse classrooms. Students undertake a number of peer-to-peer teaching episodes and apply principles learned in the classroom setting to real-world contexts. The course also encourages the students to engage in reflexive teaching practices, develop inclusive motor skill instruction lessons sensitive to diversity issues and maximize student involvement and enjoyment in PE and Sport. Fieldwork requires clearance for local school districts (clear LiveScan fingerprint screening and negative TB test results). (DVSY)

**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).

**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 165. Legal Aspects of Health, Exercise and Sport. 4 Units.**

This course addresses legal issues and responsibilities relevant to professionals in the areas of health and exercise science, sport management, sport pedagogy and athletics. General legal principles supported by case law in such areas as negligence, contract law, constitutional law, antitrust laws and unlawful discrimination are offered. (PLAW)

**HESP 167. Introduction to Sport Management. 4 Units.**

This course is for beginning sport management students and students interested in sport business. Students study general academic, managerial, and business concepts related to sport and explore the variety of sport and fitness-related businesses and organizations within the public and private sectors. Potential career opportunities are considered.

**HESP 169. 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: HESP 167 and HESP 187A.

**HESP 171. Sport Economics and Finance. 4 Units.**

This course is designed to address the respective areas of sport economics, finance, and labor relations. Both theoretical and practical aspects are explored. Students examine sport as a multi-billion dollar industry and analyze the role of sport within the larger socio-economic structure within the United States and internationally. Prerequisites: ECON 053 and BUSI 031. Junior standing.

**HESP 172. Case Analysis in Sport and Fitness Management. 4 Units.**

This course addresses the principles and practices pertinent to the development and operation of the private and commercial sport or fitness enterprise. The case study method focuses on designing and implementing the prospectus, feasibility studies, and the analysis of organizational effectiveness. Topics of special interest include the planning and controlling of resources, facility operations, and strategies for production and operations management.

**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 174. Sport Marketing and Promotions. 4 Units.**

This course focuses on three main aspects of sports marketing. First, students gain the knowledge necessary to market sport products. Second, the course covers the manner in which sport is used as a marketing tool. Finally, students learn about the variety of forms of public relations that are used by sport organizations. In the process, students become familiar with the role of technology in sport marketing and public relations. Sophomore standing.

**HESP 175. Sport Event and Facility 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. Prerequisites: BUSI 107 and HESP 174. Junior standing.

**HESP 176. Sport Management Capstone. 4 Units.**

This class is designed as the integrative pinnacle of the sport management curriculum at Pacific. This integration will occur in several ways. Students will assess critical issues in the sport management field drawing on the expertise gained throughout their Pacific educations. They will also complete comprehensive, immersive assignments that assist local underserved sport organizations. Practitioners from multiple sub-disciplines within the field will also complement instruction in the course. Finally, the course will cover practical skills for career preparation, maintenance, and development.

**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. The content of this course is highly focused toward the knowledge and skills required for taking the ACSM Fitness Specialist (HFS) certification exam. Prerequisite: HESP 147.

**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 187D. Sport Pedagogy Internship I. 2 Units.**

This class involves the student completing a semester-long internship connected to their chosen field of sport pedagogy. This internship develops their evaluation skills and encourage the student to engage in reflexive teaching practices to better prepare themselves for the challenges and terrain of their post-graduation employment. Prerequisite: HESP 131.

**HESP 187E. Sport Pedagogy Internship II. 4 Units.**

This class involves the student completing a semester-long internship connected to their chosen field of sport pedagogy. This internship develops their evaluation skills and encourage the student to engage in reflexive teaching practices to better prepare themselves for the challenges and terrain of their post-graduation employment. Prerequisite: HESP 187D.

**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 189A. Practicum: Adapted Physical Education. 2 Units.**

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Prerequisite: HESP 169 with a "C-" or better.

**HESP 189B. Practicum: Athletic Training III. 2 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 189E. Practicum: Sport Pedagogy. 2 Units.**

This course offers a supervised leadership experience in the elementary or secondary school setting. The student works as a physical education specialist and develops as well as conducts appropriate physical activity programs. Prerequisites: HESP 151 or HESP 159 and permission of instructor.

**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 189G. Practicum: Coaching. 2 Units.**

Students will be assigned to an intercollegiate or interscholarship sports team for the semester and will participate in practice sessions throughout the specific sport season. Written guidelines will be 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. 2 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 239. Advanced Applied Sport Psychology. 4 Units.**

This graduate seminar is designed for advanced students to explore theoretical concepts of psychology as they relate to individual and group behavior in physical activity environments.

**HESP 241. Advanced Sociology of Sport. 4 Units.**

This graduate seminar deals with theoretical concepts of sociology related to the American sport environment. This course uses a sociological perspective to provide an appreciation of sport as an integral part of our cultural dynamics. The relationship of sport and other social institutions such as media, economy, politics, and education are covered, as well as the relationship of sport and social stratification such as gender, race, and class.

**HESP 242. Global Sports Worlds. 4 Units.**

Like all social institutions in the United States, global forces are increasingly shaping the sports worlds we live in. Understanding this phenomenon is imperative for future practitioners with sport sciences. This course is designed to explore this relationship between sport and globalization processes. Students learn to identify the characteristics of the sport-globalization nexus and critically examine its consequences. Through a host of experiential learning opportunities, students develop a deeper understanding of the implications of global sports worlds in your field of study. The eight pre-trip meetings take place during the Spring semester (one per week from Spring break onwards). The trip to London is scheduled after these meetings each year. The students register for the class as a Spring course. Travel required. Prerequisite: HESP 279 with a "B-" or better or permission of the instructor. Graduate standing.

**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. Advanced Clinician in Sports Medicine. 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. Prerequisite: Permission of instructor.

**HESP 259. Professional Preparation in Sport Sciences. 4 Units.**

This course is designed for the future professional practitioner who wishes to deliver an effective, meaningful clinical or educational experience to a diverse population. The course helps them sustain the experiences through the knowledge to conceive and plan meaningful programs, the administrative skill to produce an organizational structure within school and/or practicum that optimizes the impact of the program, and the creative energy to link the program to opportunities for children and adults. Students engage in an in-depth study of the research on teaching and the application of research-based knowledge to the teaching and clinical professions.

**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 265. Advanced Sports Law. 4 Units.**

This course addresses legal issues and responsibilities relevant to professionals in the areas of sports medicine, sport management, sport pedagogy and athletics. General legal principles supported by case law in such areas as negligence, contract law, constitutional law, antitrust laws and unlawful discrimination are offered.

**HESP 269. Advanced Management of Sport Enterprises. 4 Units.**

The purpose of this class is to prepare graduate students to lead in the unique business environment of sport. The unique governance structure of intercollegiate athletics and professional sports is presented. Students then develop a multi-frame approach to management of sport organizations. Students also explore the subjective nature of leadership to develop a style best suited for sport. Emphasis is placed on the integration of applied research that uses leadership and management theories.

**HESP 272. Advanced Case Analysis of Sport and Fitness Management. 4 Units.**

This graduate seminar is designed to provide breadth and depth of topical knowledge beyond that covered in the introductory course.

**HESP 274. Advanced Sport Marketing and Promotions. 4 Units.**

This course provides an in-depth study of the unique nature of sport marketing that focuses on three areas. Students learn how to market sport products and events. The course explores the many mechanisms through which sport is used as a marketing tool. Finally, students learn to gain maximum benefit from the relationship between sport and the media.

**HESP 275. Advanced Sport Management. 4 Units.**

This class provides graduate students with the knowledge base necessary to lead the mega-events and manage multipurpose and single-use facilities common in sport. The first portion of the course is devoted to event planning, marketing and execution. The second part of the course focuses on planning, design and maintenance of sports facilities. Special attention is given to the environmental impact of sporting events and facilities.

**HESP 279. Research Methods in Sport Sciences. 4 Units.**

This in-depth evaluation of the various methods used in the disciplines of the sport 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. Prerequisite: 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 287A. Advanced Internship: Sport Management. 1-4 Units.**

This course provides professional leadership experience for graduate students. Agency placement is based on student goals and professional leadership background. Grading option is Pass/No Credit only.

**HESP 287B. Advanced Internship: Sport Management. 4 Units.**

This course provides professional leadership experience for graduate students. Agency placement is based on student goals and professional leadership background. Grading option is Pass/No Credit only.

**HESP 289A. Advanced Practicum: Sport Management. 4 Units.**

This course is designed to provide students with a practical experience in the application of administrative theory. Prerequisite: HESP 169 or HESP 269 with a "B-" or better. 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 course will focus on the in-depth exploration of one topic area within the field of cognitive psychology, with the specific topics varying by semester. This will be done through the reading and discussion of empirical research and review papers, and by conducting original research on the topic. Prerequisites: PSYC 015, PSYC 102 with a C- or better.

**PSYC 117. Advanced Lab in Clinical Psychology. 4 Units.**

This course is intended to give students a broad overview of the field of clinical psychology as well as experience grappling with some of the current controversies in the field. This course will cover the following topics as they relate to clinical psychology and clinical psychologists. Contemporary activities, employment settings, and subspecialties; foundations and early history; recent history; research design with a focus on single subject designs; major theoretical orientations (with a focus on behavioral and cognitive behavioral orientations); diagnoses, the DSM, and current controversies regarding both; psychological assessment including interviewing, observing behavior, cognitive and neuropsychological assessment tools; basic counseling skills and techniques; therapy interventions; ethical standards and guidelines; science and pseudoscience in clinical psychology; and, suggestions for those considering a doctoral degree in clinical psychology or a master's degree in counseling, family therapy, or social work. The course includes a lab component during which students will explore several of these topics in greater depth. 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 senior capstone 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. Prerequisites: PSYC 105 and or permission of instructor. Junior standing. The course is required for psychology majors and it is recommended for the senior year.

**PSYC 129. Advanced Lab in Developmental Psychology. 4 Units.**

This course provides a survey of methods, theories, and findings most relevant to the contemporary study of human development. Major emphasis is placed on current directions in developmental research. Course content focuses on either an age period (e.g., early childhood, adolescence) or a topical area (e.g., emotional development, social relationships) to illustrate contemporary research questions about development and the methods used to address them. Observations may be required as part of a research project. Prerequisites: PSYC 029, PSYC 102 with a C- or better. (DVSU, ETHC)

**PSYC 153. Advanced Lab in Behavioral Psychology. 4 Units.**

This course focuses on both experimental and theoretical developments related to the study of learning and behavior, with an emphasis on applications of the basic principles of learning to understand issues of social significance. Topics include altruism, behavioral economics, behavioral research methods, choice, cooperation, concept formation, culture, drug use and abuse, free will, language, and self-control. Experimental methods and analyses are emphasized. A good understanding of Pavlovian and operant conditioning is necessary for this course. 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.**

Social psychology is the scientific study of the thoughts, feelings, and behaviors of individuals in social situations. This advanced seminar is intended for students who have successfully passed PSYC 101 and PSYC 102 (with at least a C-), who have passed PSYC 069 (with at least a C-), and for those who wish to gain a deeper understanding of major issues in the field. In this advanced topics course, we will read and discuss classic and contemporary theory and research in social psychology, with special attention given to how ideas develop. We will also choose one particular topic in social psychology to explore deeply. During this course you will also design and put into action a strategy that aims to eradicate a specific problem or enhance the quality of life on campus. 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. Open This course is open only to graduate students with permission.

**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. Behavior Analysis Internship I. 1 Unit.**

This course provides clinical experience with the University of the Pacific Behavior Analysis Services Program. This course includes practice in conducting behavioral interventions, designing, implementing, and monitoring behavior analysis programs for clients. Students oversee the implementation of behavioral programs by others, attending behavioral program planning meetings, and reviewing program-relevant literature. Faculty and staff will observe interns engaging the activities in the natural environment at least once every two weeks, and provide specific feedback to interns on their performance. Multiple populations and sites will be available, including but not limited to, typically developing school-aged children in school and home settings, and individuals with psychiatric diagnoses and/or developmental disabilities in their homes or in community settings. Permission of instructor. Pass/No Credit grading only.

### PSYC 285F. Behavior Analysis Internship II. 1 Unit.

This course provides clinical experience with the University of the Pacific Behavior Analysis Services Program. This course includes practice in conducting behavior analysis programs for clients, overseeing the implementation of behavioral programs by others, attending behavioral program planning meetings, and reviewing program-relevant literature. Faculty and staff observe interns engaging in activities in the natural environment at least once every two weeks, and they provide specific feedback to interns on their performance. Multiple populations and sites are available, including but not limited to, typically developing school-aged children in school and home settings, and individuals with psychiatric diagnoses and/or developmental disabilities in their homes or in community settings. Permission of instructor. Pass/No Credit grading only.

### PSYC 287. Graduate Internship. 1-4 Units.

### PSYC 289. Practicum. 1-4 Units.

### PSYC 291. Graduate Independent Study. 1-4 Units.

### PSYC 295. Graduate Seminar in Psychology. 4 Units.

### PSYC 297. Graduate Independent Research. 1-4 Units.

Pass/No Credit grading only.

### PSYC 297D. Independent Research. 1-4 Units.

### PSYC 297E. Independent Research. 1-4 Units.

### PSYC 299. Thesis. 2 or 4 Units.

## 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

BIOL Electives (Four courses at the 200 level, one course may come from the 100 level if cross listed with a 200 level graduate course excluding Research and Independent Study) 16

### II. Thesis/Research

BIOL 297	Graduate Research	4-6
BIOL 299	Thesis	2 or 4

### III. Electives

BIOL Electives (2 courses at the 100 or 200 level or from CHEM 141) 8

*Note: 1) Students may count a maximum of six (6) units of Research and/or Independent Study toward their degree. 2) 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 129. Histology Online. 3 Units.**

This is a non-lab, online version of BIOL 128. Credit is only given once for BIOL 128 or BIOL 129. Prerequisites: BIOL 051 and BIOL 061. Recommended: BIOL 101.

**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 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 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 158. Computerized Data Acquisition. 4 Units.**

This lecture and laboratory course introduces students to experimental design and protocol. Students are trained in the programming and use of the computer data acquisition program LabVIEW, then apply the program to an intensive, team-based research project studying amphibian reproductive behavior. The class ends with a symposium-style presentation of each team's experiments and results. Prerequisites: BIOL 051 and BIOL 061.

**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 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 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 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 182. Medical Endocrinology. 4 Units.**

This lecture and laboratory course presents the fundamentals and current topics in human endocrinology. The subject is examined from a medical and clinical perspective, including "virtual" patients. Prerequisites: BIOL 051, BIOL 061, BIOL 101; CHEM 025 and CHEM 027. Recommended: BIOL 071 and BIOL 081.

**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.**

This lecture/discussion course focuses on the bidirectional interactions between an animal's behaviors and its endocrine system. Topics include: overview of the vertebrate endocrine system, courtship and sex behaviors, parenting behavior, pheromonal communication, aggression and other social behaviors, learning and memory, hunger, stress, and biological rhythms. Prerequisites: BIOL 051, BIOL 061, BIOL 101.

**BIOL 191. Independent Study. 2-4 Units.****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 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 279. Evolution. 4 Units.**

This course content is the same as BIOL 179 and a special project is required. Graduate standing.

**BIOL 291. Independent Study. 2 or 4 Units.****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

Andreas H. Franz and C. Michael McCallum, Co-Chairs

## Programs Offered

**Master of Science in Pharmaceutical and Chemical Sciences****Doctor of Philosophy in Pharmaceutical and Chemical Sciences**

Specialized Areas (Chemistry): Bioanalytical and Physical Chemistry, Drug Design/Discovery and Chemical Synthesis

Specialized Areas (Pharmaceutical Sciences): Clinical Pharmacy and Transitional Studies, Drug Targeting and Delivery, Molecular Cellular Pharmacology.

For detailed program information for these degrees please consult the Thomas J. Long School of Pharmacy and Health Sciences (<http://catalog.pacific.edu/graduate/pharmacyandhealthsciences/pharmaceuticalandchemicalsciences>) 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 I-Thermodynamics. 4 Units.**

A classical course on equilibrium thermodynamics including the laws of thermodynamics, the Gibbs equations, the phase rule, solutions, chemical reactions, non-ideal systems, multi-component phase equilibrium and equilibrium electrochemistry. Three class periods a week are required. Prerequisites: CHEM 025, CHEM 027, MATH 055, PHYS 055 all with a "C-" or better or permission of instructor.

**CHEM 163. Physical Chemistry II-Quantum Mechanics. 4 Units.**

This course is a continuation of physical chemistry and includes quantum chemistry and applications, bonding, symmetry and group theory, atomic and molecular spectroscopy, and chemical kinetics. Three class periods a week are required. Prerequisites: CHEM 025, CHEM 027, MATH 055, PHYS 055 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 laboratory course is designed to illustrate experimentally the theoretical principles and methods of thermodynamics, quantum chemistry and kinetics. It provides a research orientation through the preparation of research manuscripts and oral presentations of results. Error analysis and statistical treatment of data are emphasized. Prerequisite: CHEM 159 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 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 is designed to present an opportunity for pharmacy students who are fluent or proficient in the Spanish language to act as teaching assistants and assist other pharmacy students to learn Spanish for the Pharmacy Professional. Teaching assistants will meet with the instructor prior to each class session for class preparation and will then participate during class sessions. 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. Special Topics in Drug Discovery. 3 Units.**

This course is designed mainly for graduate students, with emphasis on new concepts in the discovery of small molecules and biologic drugs. Prerequisite: Advanced biochemistry course.

**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 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 Pharmacology I. 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 232. Molecular Pharmacology II. 4 Units.**

This is the second course in the Molecular Pharmacology series, effects of cardiovascular, endocrine, cancer chemotherapy, immunologic therapeutic agents and the mechanisms whereby these effects are induced. Drug classes will be presented to illustrate the effects of drug classes in the treatment of diseases. 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 235. Current Topics in Pharmacology and Toxicology. 2 Units.**

Each week this course focuses on a different area of research interest in pharmacology and toxicology. It involves discussions of assigned research papers that provide students with a current perspective and understanding of issues and techniques associated with the selected research topics. Graduate standing in the PCSP program.

**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 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 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

Paul Turpin, Chair

Teresa Bergman, Department Director of Graduate Studies

## 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 and complete the Graduate Record Examination with satisfactory results.

## 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	Pluralism in American Education	
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 297	Graduate Research	
COMM 299	Thesis	

6-hour written comprehensive examination	
1-hour oral examination	
<b>Non-Thesis Option Plan B</b>	
COMM 298	Non-Traditional Thesis
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

6-hour written comprehensive examination

1-hour oral comprehensive examination

### Non-Thesis Option Plan B

COMM 298 Non-Traditional Thesis

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:

HESP 274 Advanced Sport Marketing and Promotions

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

6-hour written comprehensive examination

1-hour oral comprehensive examination

### Non-Thesis Option Plan B

COMM 298 Non-Traditional Thesis

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

6-hour written comprehensive examination

1-hour oral comprehensive examination

### Non-Thesis Option Plan B

COMM 298 Non-Traditional Thesis

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. 4 Units.**

Practical and theoretical application of audio and video production techniques are covered in this course with an emphasis on aesthetic qualities of sight and sound productions. Some work involves student media facilities. A Lab fee is required. Prerequisite: COMM 031 or permission of instructor. (FILM)

**COMM 132. Writing for Media. 4 Units.**

Examination and production of electronic and print writing techniques are studied in this course with an emphasis on writing news, information, and entertainment messages for the electronic and print industries. Some work involves student media facilities. A lab fee is required. Prerequisite: COMM 031.

**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.**

Principles and methods of public relations are discussed and analyzed. Study of the mass media as publicity channels acquaints the students with the nature of the media, its limitations, and uses. Case studies involve students in practical application of public relations activities. Prerequisite: COMM 031.

**COMM 137. Public Relations Case Studies and Problems. 4 Units.**

This is an advanced course in public relations. The course engages students in case study research and application of public relations principles. There is both written and oral presentations with adherence to professional standards of excellence. Prerequisite: COMM 135.

**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 143. Intercultural Communication. 4 Units.**

This course analyzes the major variables affecting interpersonal communication between persons of different cultural backgrounds. (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. The Capstone. 4 Units.**

This senior level capstone seminar devoted to expanding and applying communication course concepts that students have learned in the communication major and applying this knowledge to contemporary communication issues. Students undertake research projects and employ a variety of communication methodologies and theories to uncover the social, historical and ethical implications of their chosen communication interest. This course is designed to foster and promote communication competence, including analytic capacity, media literacy and ability to identify ethical issues in communication. Preparation for future professional work and development are explored. Senior standing.

**COMM 151. Community Based Learning. 2 Units.**

This senior-level capstone course provides students with a supervised learning experience in an off-campus, community-based organization. Students apply their knowledge of communication theories and skills to the needs of local organizations, which allows them to contribute to the public good. 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 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 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.**

## Food Studies

<http://www.pacific.edu/Academics/Schools-and-Colleges/College-of-the-Pacific/Academics/Departments-and-Programs/Food-Studies.html>

Phone: (209) 946-2434

Polly Adema, Director of Food Studies

## Programs Offered

### Master of Arts in Food Studies

University of the Pacific offers a Master of Arts Degree in Food Studies at its San Francisco campus and online, pending WSCUC approval.

Course offerings illustrate the multidisciplinary nature of the program including anthropology, history, sociology, literature, writing, food policy, advocacy, and more. Course work focuses on developing mastery in research and writing, and in critical thinking and problem solving while

achieving fluency in a range of food-related topics. The successful student will develop exceptional proficiency in evaluating the economic, environmental, cultural, historical, political, and social forces shaping and shaped by the modern food system.

This multidisciplinary program is designed to train students to master skills necessary for success in food-related professions. Research, presentation, and writing skills developed during students' studies will equip them for careers across corporate and nonprofit sectors of the food industry including marketing, advertising, research and development, policy, advocacy work, food writing, and for advanced work in academia.

The program consists of 32 credits of course work, including a thesis or a non-thesis (exam) option. Most classes are 4 credits; special courses may be 2-4 credits. All students must take FOOD 201, Introduction to Food Studies, and three other courses from the foundational core courses numbered 202-208, plus four electives of the students' choosing.

Full-time students take two classes per semester and can complete the degree in four semesters; part-time students may take one or two classes per semester and can complete the program over a maximum of six years. There is no minimum course load required to remain in the program, but registration and matriculation fees will apply every semester to maintain active status.

### 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) will be counted towards the degree.

### Thesis and Non Thesis Options

In the thesis option (Plan A), students take the core FOOD 201 during the first year. Upon successful completion of the thesis prerequisite FOOD 208, Research Methods, students complete their thesis projects under the supervision of a faculty member in FOOD 299. That faculty member and at least one other faculty will evaluate the written thesis.

In the non-thesis option (Plan B), students take the core FOOD 201 during the first year. All students are strongly encouraged to take Food 208 but it is not required for those pursuing the non-thesis option. Plan B students do not take Food 299. Plan B students complete the degree requirements by successfully passing a comprehensive examination. Program faculty, working with the program director, contribute to the substance and evaluation of the exam. Each examination, which may include both oral and written components, will be comprehensive and specially tailored to reflect the courses taken by each individual student. A committee of two faculty will oversee the exams.

### Admission Requirements

The program enthusiastically welcomes students from a broad range of undergraduate majors and backgrounds including business, health sciences, law, the social sciences, and humanities. Program acceptance is competitive and is based on committee review of each applicant's grade point average, a personal statement, resume, and three letters of recommendation from faculty members or employers familiar with the applicant's work. Applicants will have a Bachelor of Arts or Bachelor of Science degree with a GPA of at least 3.0. In exceptional cases, students with a 2.65-2.99 cumulative GPA may be considered for conditional admission.

### Analysis of Context

- Analyze the social, economic, and cultural factors that have influenced the development, production, distribution, and consumption of food.

## Critique of Impact of Food

- Critique the effects of development, production distribution and consumption of food on human health, the environment, and social life.

## Research Skills

- Apply research skills to problems that may be encountered in professional life.

## Writing Skills

- Demonstrate writing skills appropriate to food-centered research.

## Synthesis and Problem Solving

- Synthesize knowledge and skills to address problems, with attention to ethical, aesthetic, and cultural dimensions of problem.

# Master of Arts in Food 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 food studies.

FOOD 201	Introduction to Food Studies	4
Select three of the following:		12
FOOD 202	History of Food	
FOOD 203	Food Writing	
FOOD 204	Anthropology of Food	
FOOD 205	Food and the Environment	
FOOD 206	Sociology of Food	
FOOD 207	Food, Nutrition and Human Health	
FOOD 208	Research Methods in Food Studies	
FOOD Electives (4 additional courses)		16
Select one of the following options:		
<b>Thesis Option Plan A</b>		
FOOD 299	Thesis	
<b>Non-Thesis Option Plan B</b>		
Written comprehensive examination		
Oral comprehensive examination		

## Food Studies Courses

### FOOD 201. Introduction to Food Studies. 4 Units.

This course provides an overview of the state of the field from a multidisciplinary perspective. The course examines production, distribution, consumption patterns, ways that scholars address these topics, research methodologies, and considers the practical applications of food studies to the job market.

### FOOD 202. History of Food. 4 Units.

This course makes a detailed examination of the importance of food as a catalyst in history. This course will focus on interpreting primary documents and making a critical assessment of secondary literature. It covers from the period from human evolution and the Neolithic Revolution to the present.

### FOOD 203. Food Writing. 4 Units.

This is a practical course designed to hone student's writing skills, pitch food writing to a variety of markets and address important issues for many different audiences, academic and popular. This is an intensive writing workshop.

### FOOD 204. Anthropology of Food. 4 Units.

This course examines the diversity of global food ways from biocultural and cross-cultural perspectives. It offers an analysis of the important role of food production, preparation, and eating in different cultures as well as the symbolic ritual importance of food.

### FOOD 205. Food and the Environment. 4 Units.

This course examines the causes of contemporary agriculture-food-population-environmental problems, with emphasis on analyzing how human population growth and social and environmental change have dramatically changed decision contexts, not only for small scale tradition based agriculture but also for modern agriculture. The class applies insights from demography, anthropology, political ecology to propose alternative solutions that promote a balance between agriculture, food, population, and the environment.

### FOOD 206. Sociology of Food. 4 Units.

This course offers an exploration of the production, distribution and consumption of food from a sociological perspective with emphases on political economy, culture, labor inequalities and movements for food system reform.

### FOOD 207. Food, Nutrition and Human Health. 4 Units.

This course analyzes how approaches to health and nutrition have shifted over time and across different cultures. This course will also explore the roles of food and nutrition science is shaping dietary trends and patterns.

### FOOD 208. Research Methods in Food Studies. 4 Units.

This course covers basic techniques for collecting, interpreting and analyzing qualitative data in the field of food studies. The class examines the theoretical approaches to various types of qualitative research as well as the practical techniques of data collection, such as working with primary documents, identifying key informants, selecting respondents, collecting field notes, analyzing data, writing and presenting findings to academic and non-academic audiences. Prerequisite: FOOD 201 with a "C-" or better.

### FOOD 231. Food and Literature. 4 Units.

This course will provide an introduction to literary food studies and trace the development of key themes within food literature over the past two centuries, ranging from the role of meat in American society to the ways in which eating and cooking nourish the imagination. We'll begin by reading *Eating Words: A Norton Anthology of Food Writing* before moving onto such literary classics as Jean Anthelme Brillat-Savarin's *Physiology of Taste*, Upton Sinclair's *The Jungle*, M. F. K. Fisher's *The Gastronomical Me*, The Alice B. Toklas *Cook Book* and Ruth Ozeki's *My Year of Meats*. In addition, we'll explore the historical development of nonfiction food writing genres, including cookbooks, culinary memoir, and gastronomic essays. The course assignments will focus on improving writing skills, oral communication, and literary analyses.

### **FOOD 232. Local Food History: A Case Study of San Francisco. 4 Units.**

In this course we will cover the history of food in the San Francisco Bay Area, tracing how succeeding waves of immigrants adapted their cuisines to a rich new environment. From the Spanish mission period through Chez Panisse and the California Cuisine movement, we will examine changing foodways as well as the marketing of particular dishes and restaurants to locals and to visitors from around the world. Students will visit culinary sites important to the history of the city, such as the Golden Gate Fortune Cookie Factory in Chinatown, the Cinderella Russian Bakery in Inner Richmond, and the Anchor Brewery on Potrero Hill. Readings include Jennifer Lee's *The Fortune Cookie Chronicles*, Matthew Booker's *Down By The Bay: San Francisco's History Between the Tides*, and Sally Fairfax's *California Cuisine and Just Food*. You will also get trained in oral history methods and in writing local food history. After reading Carol Kammen's *On Doing Local History*, weekly assignments will lead you, step by step, through the research and writing stages of a twelve-page research paper about a specific topic in San Francisco food history. Students will work with both primary and secondary materials relating to their topic, and are encouraged to incorporate oral history research where appropriate.

### **FOOD 234. Food Justice. 4 Units.**

This course investigates the roles of intersecting hierarchies including race, class, gender, national status and sexuality in shaping the production, distribution and consumption of food. Through readings, case studies and research, we examine community-based and policy responses to these inequalities. This course includes field trips to and/or guest speakers from local food justice organizations.

### **FOOD 235. The Business of Food. 4 Units.**

This class will provide a multisectoral overview of both prevailing and emerging structures and dynamics of the food industry. We will explore the food value chain from field to fork, employing the frameworks of strategic business analysis, market failure, and the influences of policy and the regulatory environment. Students will use these frameworks to evaluate and assess business models, products, and activities of established "Big Food" players and new market entrants. The class includes evaluation of current topics and non-market actors shaping the food industry to explore how cultural and social behaviors affect food consumption, as well as industry organization, the behavior and activities of industry participants. Also included will be a survey of basic concepts related to product development, pricing, and marketing.

### **FOOD 287. Graduate Internship. 1-4 Units.**

### **FOOD 287A. Graduate Internship. 1-4 Units.**

### **FOOD 291. Independent Study. 1-4 Units.**

### **FOOD 293. Special Topics. 1-4 Units.**

### **FOOD 297. Graduate Research. 1-4 Units.**

### **FOOD 299. Thesis. 4 Units.**

## **Health, Exercise and Sport Sciences**

<http://www.pacific.edu/Academics/Schools-and-Colleges/College-of-the-Pacific/Academics/Departments-and-Programs/Health-Exercise-and-Sport-Sciences.html>

Phone: (209) 946-2209

Location: Main Gym

Lara Killick, Director of Graduate Studies, (email: [lkillick@pacific.edu](mailto:lkillick@pacific.edu))

The graduate program in Health, Exercise and Sport Sciences provides for scholarly study in the areas of Health & Exercise Science, Coaching Science, Sport Pedagogy (PE Single Subject Credential) and Intercollegiate Sport & Campus Recreation Administration (Sport Management). Each concentration 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, Business, 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**
- **Coaching Science & Sport Performance**
- **Sport Pedagogy (PE single subject teacher credential)**
- **Intercollegiate Sport & Campus Recreation Administration (Sport Management)**

## **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 Studies Committee.
2. Completion of the Graduate Records Examination (GRE)
3. Minimum 3.0 GPA (Cumulative *and* Major)
4. 3 Letters of Recommendation
5. Personal Essay/Statement
6. Official copies of Transcripts
7. Resume/CV

### **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 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 Sport Sciences	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.

**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 Sport Sciences	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 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 Director 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 Director serves as the coordinator of the Comprehensive Exams.

**Additional information:**

1. All graduate students are assigned the Graduate Director as their faculty advisor.
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 the Graduate Director **prior to registration**.
4. Dates for open colloquiums, written comprehensive examinations and final oral examinations are coordinated through the Graduate Director.

**Hlth, Exercise Sprt Sci Courses**

**HESP 100. Introduction to Research in Health, Exercise and Sport Sciences. 3 Units.**

This class is designed to develop research skills specific to the fields within health, exercise and sport sciences. Students learn to collect, review, synthesize and critically analyze scholarly research. Students are also able to create research questions and establish hypotheses, and they are supposed to a variety of data collection methods. In addition, students learn to apply appropriate techniques to interpret data and apply the results in health, exercise, and sport settings. The intention of this course is to develop analytical skills to enable to the student to conduct and evaluate ethical research in your chosen field.

**HESP 101. Sport Data and Analytics. 4 Units.**

Sport analytics refers to the use of data and quantitative methods to measure performance and make decisions to gain advantage in the sport industry. This course aims to explore recent trends in sport analytics from a practical point of view, offering students 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.

**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 120. Instructional Strategies and Methods of Teaching and Coaching. 4 Units.**

This course is designed for the future physical educator or coach to deliver an effective, meaningful physical education curriculum to a diverse population of students. Emphasis is on physical education pedagogy; the skills and techniques that successful teachers use to ensure student learning. Students engage in guided teaching and systematic observation experiences at the primary and secondary school levels in an effort to introduce them to effective teaching and coaching behaviors.

**HESP 121. Analysis of Team and Individual Sports. 3 Units.**

This is an applied motor learning approach to skill acquisition for team and Individual sports. In addition to personal skill development, students learn to prepare the introduction, explanation and demonstration of sports skills; develop and maintain skill levels through practice and reinforcement; analyze movement by systematically observing performance; utilize biomechanical concepts to analyze, correct and enhance performance and cognitive processes to improve performance. Ten to 15 different team and individual sports are presented and instruction time per sport varies. Lab fee required.

**HESP 123. Analysis of Nontraditional Games and Sports. 3 Units.**

This is an applied motor learning approach to skill acquisition for nontraditional games and sports. A variety of nontraditional games and outdoor activities embedded in the CA curriculum framework for physical education. Clinical experience is provided for secondary students in the community. Eight to 10 different nontraditional games and sports are presented and instruction time per sport varies. Lab fee required.

**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. Kinesiology. 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. Exercise 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 139. Exercise Psychology. 4 Units.**

This course employs the theories and methods of psychology to examine the related fields of competitive sports, fitness, exercise, and rehabilitation from injury. Major questions addressed in the course include: How do psychological factors influence participation in physical activity and performance of the individual? How does participation in physical activity or incapacity due to an injury affect the psychological make-up of the individual? These questions are explored from educational, coaching, research, and clinical perspectives.

**HESP 141. Sport, Culture and U.S. Society. 4 Units.**

This course is designed to explore the relationship between sport, culture and society in both the USA and the broader global world. Students learn to critically examine a wide range of topics that include, but not limited to, sport and gender, sport and race, global sports worlds, drugs and violence in sport, sport and politics and the crime-sport nexus. The intention of this course is to develop the student's sociological imagination and encourage the student to think critically about the role sport plays in the development of societies, ideologies and everyday life. (DVSY, ETHC, GE1B, GEND)

**HESP 142. Sport and Globalization. 3 Units.**

This course examines the interaction between sport and globalization. Globalization and its underlying forces are explored as well as the manner in which sport and these global forces interact. The course then explores the structure, governance, and politics of global sport. Special attention is given to the processes that facilitate and impede globalization and the role sport plays in both. The course also extensively covers the consequences resulting from the reciprocal relationship between sport and globalization.

**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 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 152. Secondary Physical Education. 4 Units.**

This course is designed for junior/senior level students in the Sport Sciences/Sport Pedagogy concentration to deliver an effective, meaningful physical education curriculum to diverse students. This course covers curriculum components that include content, content organization, distinctive curriculum models and aspects of curriculum application. Students learn how to sustain a positive learning experience, conceive and plan meaningful curricula for school based instruction, and link the school program to opportunities for adolescents outside of school. Prerequisites: HESP 121, HESP 123, HESP 151.

**HESP 153. Adapted Physical Education and Sport. 4 Units.**

This course is designed to provide students with the theoretical and practical tools necessary to teach Physical Education (PE) and Sport across diverse settings. Students learn a wide range of teaching skills that facilitate their ability to create an inclusive learning environment in PE and Sport. Students explore a variety of adapted motor skills activities, federal/state legislative mandates and related policies, effective pedagogical and assessment strategies, classroom management skills, the use of constructive feedback and the development of appropriate student learning outcomes within diverse classrooms. Students undertake a number of peer-to-peer teaching episodes and apply principles learned in the classroom setting to real-world contexts. The course also encourages the students to engage in reflexive teaching practices, develop inclusive motor skill instruction lessons sensitive to diversity issues and maximize student involvement and enjoyment in PE and Sport. Fieldwork requires clearance for local school districts (clear LiveScan fingerprint screening and negative TB test results). (DVSJ)

**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).

**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 165. Legal Aspects of Health, Exercise and Sport. 4 Units.**

This course addresses legal issues and responsibilities relevant to professionals in the areas of health and exercise science, sport management, sport pedagogy and athletics. General legal principles supported by case law in such areas as negligence, contract law, constitutional law, antitrust laws and unlawful discrimination are offered. (PLAW)

**HESP 167. Introduction to Sport Management. 4 Units.**

This course is for beginning sport management students and students interested in sport business. Students study general academic, managerial, and business concepts related to sport and explore the variety of sport and fitness-related businesses and organizations within the public and private sectors. Potential career opportunities are considered.

**HESP 169. 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: HESP 167 and HESP 187A.

**HESP 171. Sport Economics and Finance. 4 Units.**

This course is designed to address the respective areas of sport economics, finance, and labor relations. Both theoretical and practical aspects are explored. Students examine sport as a multi-billion dollar industry and analyze the role of sport within the larger socio-economic structure within the United States and internationally. Prerequisites: ECON 053 and BUSI 031. Junior standing.

**HESP 172. Case Analysis in Sport and Fitness Management. 4 Units.**

This course addresses the principles and practices pertinent to the development and operation of the private and commercial sport or fitness enterprise. The case study method focuses on designing and implementing the prospectus, feasibility studies, and the analysis of organizational effectiveness. Topics of special interest include the planning and controlling of resources, facility operations, and strategies for production and operations management.

**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 174. Sport Marketing and Promotions. 4 Units.**

This course focuses on three main aspects of sports marketing. First, students gain the knowledge necessary to market sport products. Second, the course covers the manner in which sport is used as a marketing tool. Finally, students learn about the variety of forms of public relations that are used by sport organizations. In the process, students become familiar with the role of technology in sport marketing and public relations. Sophomore standing.

**HESP 175. Sport Event and Facility 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. Prerequisites: BUSI 107 and HESP 174. Junior standing.

**HESP 176. Sport Management Capstone. 4 Units.**

This class is designed as the integrative pinnacle of the sport management curriculum at Pacific. This integration will occur in several ways. Students will assess critical issues in the sport management field drawing on the expertise gained throughout their Pacific educations. They will also complete comprehensive, immersive assignments that assist local underserved sport organizations. Practitioners from multiple sub-disciplines within the field will also complement instruction in the course. Finally, the course will cover practical skills for career preparation, maintenance, and development.

**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. The content of this course is highly focused toward the knowledge and skills required for taking the ACSM Fitness Specialist (HFS) certification exam. Prerequisite: HESP 147.

**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 187D. Sport Pedagogy Internship I. 2 Units.**

This class involves the student completing a semester-long internship connected to their chosen field of sport pedagogy. This internship develops their evaluation skills and encourage the student to engage in reflexive teaching practices to better prepare themselves for the challenges and terrain of their post-graduation employment. Prerequisite: HESP 131.

**HESP 187E. Sport Pedagogy Internship II. 4 Units.**

This class involves the student completing a semester-long internship connected to their chosen field of sport pedagogy. This internship develops their evaluation skills and encourage the student to engage in reflexive teaching practices to better prepare themselves for the challenges and terrain of their post-graduation employment. Prerequisite: HESP 187D.

**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 189A. Practicum: Adapted Physical Education. 2 Units.**

These courses provide advanced practicum work in Sport Medicine. See HESP 089 for subcategories and enrollment limitations. Prerequisite: HESP 169 with a “C-” or better.

**HESP 189B. Practicum: Athletic Training III. 2 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 189E. Practicum: Sport Pedagogy. 2 Units.**

This course offers a supervised leadership experience in the elementary or secondary school setting. The student works as a physical education specialist and develops as well as conducts appropriate physical activity programs. Prerequisites: HESP 151 or HESP 159 and permission of instructor.

**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 189G. Practicum: Coaching. 2 Units.**

Students will be assigned to an intercollegiate or interscholarship sports team for the semester and will participate in practice sessions throughout the specific sport season. Written guidelines will be 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. 2 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 239. Advanced Applied Sport Psychology. 4 Units.**

This graduate seminar is designed for advanced students to explore theoretical concepts of psychology as they relate to individual and group behavior in physical activity environments.

**HESP 241. Advanced Sociology of Sport. 4 Units.**

This graduate seminar deals with theoretical concepts of sociology related to the American sport environment. This course uses a sociological perspective to provide an appreciation of sport as an integral part of our cultural dynamics. The relationship of sport and other social institutions such as media, economy, politics, and education are covered, as well as the relationship of sport and social stratification such as gender, race, and class.

**HESP 242. Global Sports Worlds. 4 Units.**

Like all social institutions in the United States, global forces are increasingly shaping the sports worlds we live in. Understanding this phenomenon is imperative for future practitioners with sport sciences. This course is designed to explore this relationship between sport and globalization processes. Students learn to identify the characteristics of the sport-globalization nexus and critically examine its consequences. Through a host of experiential learning opportunities, students develop a deeper understanding of the implications of global sports worlds in your field of study. The eight pre-trip meetings take place during the Spring semester (one per week from Spring break onwards). The trip to London is scheduled after these meetings each year. The students register for the class as a Spring course. Travel required. Prerequisite: HESP 279 with a "B-" or better or permission of the instructor. Graduate standing.

**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. Advanced Clinician in Sports Medicine. 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. Prerequisite: Permission of instructor.

**HESP 259. Professional Preparation in Sport Sciences. 4 Units.**

This course is designed for the future professional practitioner who wishes to deliver an effective, meaningful clinical or educational experience to a diverse population. The course helps them sustain the experiences through the knowledge to conceive and plan meaningful programs, the administrative skill to produce an organizational structure within school and/or practicum that optimizes the impact of the program, and the creative energy to link the program to opportunities for children and adults. Students engage in an in-depth study of the research on teaching and the application of research-based knowledge to the teaching and clinical professions.

**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 265. Advanced Sports Law. 4 Units.**

This course addresses legal issues and responsibilities relevant to professionals in the areas of sports medicine, sport management, sport pedagogy and athletics. General legal principles supported by case law in such areas as negligence, contract law, constitutional law, antitrust laws and unlawful discrimination are offered.

**HESP 269. Advanced Management of Sport Enterprises. 4 Units.**

The purpose of this class is to prepare graduate students to lead in the unique business environment of sport. The unique governance structure of intercollegiate athletics and professional sports is presented. Students then develop a multi-frame approach to management of sport organizations. Students also explore the subjective nature of leadership to develop a style best suited for sport. Emphasis is placed on the integration of applied research that uses leadership and management theories.

**HESP 272. Advanced Case Analysis of Sport and Fitness Management. 4 Units.**

This graduate seminar is designed to provide breadth and depth of topical knowledge beyond that covered in the introductory course.

**HESP 274. Advanced Sport Marketing and Promotions. 4 Units.**

This course provides an in-depth study of the unique nature of sport marketing that focuses on three areas. Students learn how to market sport products and events. The course explores the many mechanisms through which sport is used as a marketing tool. Finally, students learn to gain maximum benefit from the relationship between sport and the media.

**HESP 275. Advanced Sport Management. 4 Units.**

This class provides graduate students with the knowledge base necessary to lead the mega-events and manage multipurpose and single-use facilities common in sport. The first portion of the course is devoted to event planning, marketing and execution. The second part of the course focuses on planning, design and maintenance of sports facilities. Special attention is given to the environmental impact of sporting events and facilities.

**HESP 279. Research Methods in Sport Sciences. 4 Units.**

This in-depth evaluation of the various methods used in the disciplines of the sport 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. Prerequisite: 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 287A. Advanced Internship: Sport Management. 1-4 Units.**

This course provides professional leadership experience for graduate students. Agency placement is based on student goals and professional leadership background. Grading option is Pass/No Credit only.

**HESP 287B. Advanced Internship: Sport Management. 4 Units.**

This course provides professional leadership experience for graduate students. Agency placement is based on student goals and professional leadership background. Grading option is Pass/No Credit only.

**HESP 289A. Advanced Practicum: Sport Management. 4 Units.**

This course is designed to provide students with a practical experience in the application of administrative theory. Prerequisite: HESP 169 or HESP 269 with a "B-" or better. 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  
Scott Jensen, Chair  
Carolynn Kohn, Director of Graduate Studies

## Program Offered

### Master of Arts in 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.

All students:

- take the same courses and receive formal academic training in behavior analytic principles and techniques.
- earn their stipends 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.

Our course sequence and supervised experience have been Verified by the BACB® and our students have a high rate of sitting for and passing the BCBA® 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.

Informational Brochure can be downloaded here ([http://catalog.pacific.edu/stocktongraduate/collegeofthepacific/psychology/2017-2018\\_Pacific\\_psy\\_grad\\_program.pdf](http://catalog.pacific.edu/stocktongraduate/collegeofthepacific/psychology/2017-2018_Pacific_psy_grad_program.pdf))

Answers to FAQs can be downloaded here ([http://catalog.pacific.edu/stocktongraduate/collegeofthepacific/psychology/FAQ\\_MA\\_program\\_2017-2018.pdf](http://catalog.pacific.edu/stocktongraduate/collegeofthepacific/psychology/FAQ_MA_program_2017-2018.pdf))

### The program prepares students for:

1) Sitting for the Behavior Analyst Certification Board® exam ([www.bacb.com](http://www.bacb.com)) and subsequent employment in settings where applied behavior analysis is used. Students seeking this option typically earn their stipend through BACB Verified supervised clinical experience.

2) Applying to PhD programs in behavior analysis. Students seeking this option also typically earn their stipend through BACB Approved supervised clinical experience.

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.

3) Applying to PhD programs in behavioral clinical/counseling psychology. Students seeking this option typically earn their stipend 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 one of the following options:

2

#### A) Doctoral Preparation Track

PSYC 297	Graduate Independent Research	
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#### B) Applied Behavior Analysis Track

PSYC 285E	Behavior Analysis Internship I	
PSYC 285F	Behavior Analysis Internship II	

**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 course will focus on the in-depth exploration of one topic area within the field of cognitive psychology, with the specific topics varying by semester. This will be done through the reading and discussion of empirical research and review papers, and by conducting original research on the topic. Prerequisites: PSYC 015, PSYC 102 with a C- or better.

### PSYC 117. Advanced Lab in Clinical Psychology. 4 Units.

This course is intended to give students a broad overview of the field of clinical psychology as well as experience grappling with some of the current controversies in the field. This course will cover the following topics as they relate to clinical psychology and clinical psychologists: Contemporary activities, employment settings, and subspecialties; foundations and early history; recent history; research design with a focus on single subject designs; major theoretical orientations (with a focus on behavioral and cognitive behavioral orientations); diagnoses, the DSM, and current controversies regarding both; psychological assessment including interviewing, observing behavior, cognitive and neuropsychological assessment tools; basic counseling skills and techniques; therapy interventions; ethical standards and guidelines; science and pseudoscience in clinical psychology; and, suggestions for those considering a doctoral degree in clinical psychology or a master's degree in counseling, family therapy, or social work. The course includes a lab component during which students will explore several of these topics in greater depth. 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 senior capstone 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. Prerequisites: PSYC 105 and or permission of instructor. Junior standing. The course is required for psychology majors and it is recommended for the senior year.

**PSYC 129. Advanced Lab in Developmental Psychology. 4 Units.**

This course provides a survey of methods, theories, and findings most relevant to the contemporary study of human development. Major emphasis is placed on current directions in developmental research. Course content focuses on either an age period (e.g., early childhood, adolescence) or a topical area (e.g., emotional development, social relationships) to illustrate contemporary research questions about development and the methods used to address them. Observations may be required as part of a research project. Prerequisites: PSYC 029, PSYC 102 with a C- or better. (DVSU, ETHC)

**PSYC 153. Advanced Lab in Behavioral Psychology. 4 Units.**

This course focuses on both experimental and theoretical developments related to the study of learning and behavior, with an emphasis on applications of the basic principles of learning to understand issues of social significance. Topics include altruism, behavioral economics, behavioral research methods, choice, cooperation, concept formation, culture, drug use and abuse, free will, language, and self-control. Experimental methods and analyses are emphasized. A good understanding of Pavlovian and operant conditioning is necessary for this course. 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.**

Social psychology is the scientific study of the thoughts, feelings, and behaviors of individuals in social situations. This advanced seminar is intended for students who have successfully passed PSYC 101 and PSYC 102 (with at least a C-), who have passed PSYC 069 (with a least a C-), and for those who wish to gain a deeper understanding of major issues in the field. In this advanced topics course, we will read and discuss classic and contemporary theory and research in social psychology, with special attention given to how ideas develop. We will also choose one particular topic in social psychology to explore deeply. During this course you will also design and put into action a strategy that aims to eradicate a specific problem or enhance the quality of life on campus. 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. Open This course is open only to graduate students with permission.

**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. Behavior Analysis Internship I. 1 Unit.**

This course provides clinical experience with the University of the Pacific Behavior Analysis Services Program. This course includes practice in conducting behavioral interventions, designing, implementing, and monitoring behavior analysis programs for clients. Students oversee the implementation of behavioral programs by others, attending behavioral program planning meetings, and reviewing program-relevant literature. Faculty and staff will observe interns engaging the activities in the natural environment at least once every two weeks, and provide specific feedback to interns on their performance. Multiple populations and sites will be available, including but not limited to, typically developing school-aged children in school and home settings, and individuals with psychiatric diagnoses and/or developmental disabilities in their homes or in community settings. Permission of instructor. Pass/No Credit grading only.

**PSYC 285F. Behavior Analysis Internship II. 1 Unit.**

This course provides clinical experience with the University of the Pacific Behavior Analysis Services Program. This course includes practice in conducting behavior analysis programs for clients, overseeing the implementation of behavioral programs by others, attending behavioral program planning meetings, and reviewing program-relevant literature. Faculty and staff observe interns engaging in activities in the natural environment at least once every two weeks, and they provide specific feedback to interns on their performance. Multiple populations and sites are available, including but not limited to, typically developing school-aged children in school and home settings, and individuals with psychiatric diagnoses and/or developmental disabilities in their homes or in community settings. Permission of instructor. Pass/No Credit grading only.

**PSYC 287. Graduate Internship. 1-4 Units.****PSYC 289. Practicum. 1-4 Units.****PSYC 291. Graduate Independent Study. 1-4 Units.****PSYC 295. Graduate Seminar in Psychology. 4 Units.****PSYC 297. Graduate Independent Research. 1-4 Units.**

Pass/No Credit grading only.

**PSYC 297D. Independent Research. 1-4 Units.****PSYC 297E. Independent Research. 1-4 Units.****PSYC 299. Thesis. 2 or 4 Units.**

# CONSERVATORY OF MUSIC

<http://www.pacific.edu/conservatory/>  
Phone: (209) 946-2415  
Location: Faye Spanos Concert Hall  
Peter Witte, 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 and Master of Arts in Music Therapy. Additionally, the Master of Education (with an emphasis in music education) is available through the Gladys L. 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 Majors

1. A live audition or tape of either:
  - The candidate's primary solo performing medium.
  - A recent (within two years) example of a performance or demonstration by a school ensemble or class taught or conducted by the applicant.
  - The candidate's original compositions (with scores).
2. A Bachelor's Degree in Music.
3. Apply for and be accepted into the Graduate School.
4. Grade point average of at least 3.0 for the last two year of undergraduate study.

5. Successful completion of the basic aptitude portion of the Graduate Record Examination. (GRE). The music subject exam of the Graduate Record Examination is not required. In cases where a student has earned an exemplary undergraduate GPA (3.5 or higher), the GRE examination requirements may be waived by the Conservatory Graduate Studies Chair.
6. Candidates must apply for and be accepted into the Graduate programs of the Conservatory of Music (and the School of Education, if they do not already possess a music education degree/teaching credential).
7. Credential candidates must apply for and meet the admission procedures and standards of the Credential Program of the Gladys L. School of Education during the first term of attendance.
8. Instructions regarding repertory and recording specifications are available in the Office of the Dean, Conservatory of Music and should be requested by all applicants.

## Music Therapy Majors

1. Music Audition (live or DVD recording):
  - Candidates should prepare two contrasting pieces on their principal instrument/voice.
  - Sing two pieces from a traditional or contemporary musical repertoire with self-accompaniment on piano and guitar (proficiency on both piano and guitar is an important consideration for potential candidates). For these pieces, candidates may use sheet music or a lead sheet.
  - Sing one American folk song from memory a capella.
2. A Bachelor's degree in music or related fields.
3. Undergraduate GPA of 3.0 or better.
4. Online application form through the Graduate School.
5. 3 letters of recommendation.
6. General GRE scores (GRE is not required for applicants with GPA of 3.5 or higher.)
7. Official Transcripts
8. Statement of intent
9. Resume

## 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. 2 Units.**

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. 2 Units.**

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. 3 Units.****MEDU 221. Choral Organization, Conducting and Literature. 3 Units.****MEDU 222. Advanced Problems in Elementary Music Teaching. 3 Units.****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 Management Courses

**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: MMGT 009, MMGT 106, Junior Standing or instructor permission.

**MMGT 121. Media Promotion. 4 Units.**

This is a hands-on lab class in which students learn to promote designated projects for clients, such as the MMGT 120 Media Production projects, using various means including paid, owned, and earned media such as a YouTube, Facebook, Vimeo, Pinterest, Reddit, as well as traditional media outlets including print and broadcast. Program faculty designate various 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 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. Prerequisites: MMGT 120, junior standing or permission of instructor. Concurrent enrollment in MMGT 120 is not permitted. Priority enrollment for major; non-majors may enroll with instructor permission, pending available space.

**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. Desktop Music Production. 3 Units.**

This course is an in-depth look at the creative music potential of the Digital Audio Workstation. It offers students a comprehensive understanding of music production when working in a DAW environment. Using Logic Pro X and Ableton Live applications, this hands-on, three-unit, 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. Prerequisite: 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 repeated for credit. Prerequisite: 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 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 190A. Portfolio Review II. 0 Units.**

Each Music Industry Studies major prepares 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 090, Junior standing in BS in Music Industry.

**MMGT 190B. Portfolio Review III. 0 Units.**

Each Music Industry Studies major prepares 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 090, MMGT 190A, Junior standing in BS in Music Industry.

**MMGT 190C. Portfolio Presentation. 1 Unit.**

Each Music Industry Studies major prepares 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 is 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 in BS in Music Industry.

**MMGT 191. Independent Study. 1-2 Units.****MMGT 196. Music Industry Career Development. 2 Units.**

MMGT 196 is a launch pad for seniors about to enter the music industry. Students assess current career trends, meet with leading practitioners, perform research in their specific field of interest and fine-tune their professional portfolio. Professional skill development in interviewing and presenting one's self to employers. Senior standing in MMGT of School of Business Arts and Entertainment emphasis.

**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 introduce 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 "manager" 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 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: MMGT 009, MMGT 096, Junior Standing or instructor permission.

**MMGT 221. Media Promotion. 4 Units.**

This is a hands-on lab class in which students learn to promote designated projects for clients, such as the MMGT 120 Media Production projects, using various means including paid, owned, and earned media such as a YouTube, Facebook, Vimeo, Pinterest, Reddit, as well as traditional media outlets including print and broadcast. Program faculty designate various 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 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.

**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 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.**

MTHR 141 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 111 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 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 current theories and techniques of music-centered psychotherapy for supportive, re-educative/rehabilitative, and re-constructive levels of clinical practice with a variety of populations. The course includes development of therapeutic relationship through music improvisation, and focused music-evoked imagery to address supportive and re-educative goals for individual clients. Experiential learning includes classroom simulations and supervised clinical practice. Prerequisites: MTHR 187 (or an AMTA-approved clinical internship) and MTHR 230 (or Level I training in the Bonny Method of Guided Imagery and Music) or 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 299. Thesis. 1-4 Units.**

Students create an original monograph that embodies original research.

## General Music Courses

**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 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 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. 2 Units.**

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. 2 Units.**

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. 3 Units.****MEDU 221. Choral Organization, Conducting and Literature. 3 Units.****MEDU 222. Advanced Problems in Elementary Music Teaching. 3 Units.****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.**

## General Music Courses

**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 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. This popular and flexible learning option starts with strong basic 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.

*\* 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 one of two tracks 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 advisor 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. The work for the master's degree must be completed within 7 years from the first semester of classes.
3. 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.
4. Students who provide evidence of prior equivalent graduate-level coursework may transfer up to six units, with permission of the advisor and approval of the music therapy program director.
5. IRB oversight and ongoing faculty mentoring of students during Thesis are required.
  - Students must be continuously enrolled for a minimum of 1 unit of credit each Fall or Spring semester while working with human research subjects.
  - Students must be enrolled for a minimum of 1 unit of credit during the semesters in which the thesis is proposed and when it is defended.
6. Thesis and Clerkship defense meetings with the student's faculty committee must be scheduled between September 1 and May 1. Exceptions to this policy may be made with approval by the music therapy program director.

## Required Advanced Clinical Competencies

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	4
MTHR 187	Internship in Music Therapy	2

### 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

\* 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:		6
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	

## 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.**

MTHR 141 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 111 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 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 current theories and techniques of music-centered psychotherapy for supportive, re-educative/rehabilitative, and re-constructive levels of clinical practice with a variety of populations. The course includes development of therapeutic relationship through music improvisation, and focused music-evoked imagery to address supportive and re-educative goals for individual clients. Experiential learning includes classroom simulations and supervised clinical practice. Prerequisites: MTHR 187 (or an AMTA-approved clinical internship) and MTHR 230 (or Level I training in the Bonny Method of Guided Imagery and Music) or 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 299. Thesis. 1-4 Units.**

Students create an original monograph that embodies original research.

## General Music Courses

**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.

# EBERHARDT SCHOOL OF BUSINESS

www.business.pacific.edu  
Phone: (209) 946-2476  
Location: Weber Hall  
David Dauwalder, Interim Dean  
Cynthia F. Eakin, Interim Associate Dean

## Programs Offered

**Master of Business Administration (MBA)**  
**Master of Accounting (MAcc)**  
**Bachelor of Science in Accounting/Master of Accounting Dual Degree Program**  
**JD/MBA**  
**PharmD/MBA**

## 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 Business Administration are:

1. Demonstrate business knowledge and skills.
  - a. For each business discipline, each student demonstrates knowledge of business principles, concepts, theories, and perspectives.
  - b. For each business discipline, each student is skilled in the use of business procedures, methods, strategies, and approaches.
  - c. Each student demonstrates an understanding of the interrelationships among business disciplines.

The business disciplines include accounting, finance, management, and marketing.

2. Apply business knowledge and skills.

Each student can apply knowledge and skills to business situations and problems in domestic and international settings. This includes:

- a. Strategic thinking. Each student can analyze business environments and opportunities, and align business activities when developing and implementing organizational strategy in complex and uncertain conditions.
  - b. Critical thinking. Each student can identify problems, define objectives, gather and analyze information, evaluate risks and alternatives, and make decisions that are ethical and socially responsible, and incorporate cultural perspectives.
3. Demonstrate effective teamwork skills.

Each student can work effectively with others as a colleague and as a manager. This includes:

- a. Teamwork. Each student is able to work in a team and collaborate effectively with others.
  - b. Group and organization effectiveness. Each student is able to manage, influence, and lead others.
4. Communicate clear ideas and plans.
    - a. Each student demonstrates effective oral communication skills in formats appropriate to the situation and audience.
    - b. Each student demonstrates effective written communication skills in formats appropriate to the situation and audience.

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 Business Administration

The Eberhardt School of Business 16-month full-time MBA Program is designed to train the managers of the 21<sup>st</sup> century. The rigorous and intellectually challenging coursework goes beyond the traditional business school curriculum to emphasize important managerial skills like leadership, innovation, communication and a global perspective.

## Master of Accounting

The Master of Accounting is designed for students who wish to apply for licensure as a Certified Public Accountant. The challenging coursework goes beyond traditional accounting curriculum to emphasize important skills such as leadership, communication, professional ethics, and applied research. 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 two years 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 MBA and Master of Accounting programs 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.
- A score on the Graduate Management Admissions Test (GMAT). For GMAT information and materials go to [www.mba.com](http://www.mba.com) (<http://www.mba.com>). These scores must be less than five years old.
- Applicants are encouraged to prepare for the GMAT by obtaining review material and sample questions published specifically for this purpose.

## Graduate Program Prerequisites

Although there are no required program prerequisites, MBA applicants are strongly urged to take courses in macroeconomics, microeconomics, statistics, and calculus.

## MBA Program Requirements

### Curriculum

The full-time MBA curriculum has a global orientation and is designed around an intensive phase of foundation courses and an advanced phase of integrated management studies. It offers a carefully designed combination of rigorous classroom work, intensive case-based discussions, and off-campus experiences. Full-time students progress through the program as part of a cohort.

### Internship Program

All students are required to participate in an internship during the MBA program.

### Applied Research/Consulting Projects

All students participate in field projects throughout their MBA courses. Students who desire additional field experience may apply for additional internships or consulting projects.

### International Experience

Because international competency is an essential element of success in today's global economy, all Eberhardt School of Business MBA students participate in an international business experience through the Global Business Competition course (BUSI 268). This course requires overseas travel of approximately two-weeks, and has been conducted locations such as China, Turkey, Panama, Costa Rica, Chile, Finland, Hong Kong, Korea, Singapore, France, Spain, Taiwan, England and Ireland. Students are responsible for tuition and all travel costs including airfare, lodging, ground transportation, meals, and other program costs.

## Master of Business Administration - Full Time Program

Students must complete a minimum of 51 units with a Pacific cumulative grade point average of 3.0 to earn the master of business administration degree.

### I. Course Requirements

#### First Fall Semester

BUSI 211	Applied Business Principles	17
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#### Spring Semester

BUSI 220	Corporate Finance	3
or BUSI 250	Health Finance: Health Insurance	

BUSI 265	Global Marketing Strategy	3
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BUSI 274	Managing Quality/Productivity	3
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BUSI 276	Entrepreneurial Management	3
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Plus One Elective Course *		3
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#### First Summer Session

BUSI 268	Global Business Competition	3
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#### Second Fall Semester

BUSI 213	Ethics and Corporate Social Responsibility	3
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BUSI 214	Negotiation	2
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BUSI 279	Leadership	2
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BUSI 281	Strategic Management	3
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Plus Two Elective Courses *	6
<b>Total Hours</b>	<b>51</b>

## Electives

The 16-month MBA includes electives in Finance, Marketing, Entrepreneurship, Sport Management, and Healthcare Management.

### Finance Electives

BUSI 221	Entrepreneurial Finance	3
BUSI 222	Student Investment Fund	3
BUSI 223	Investment Management	3
BUSI 226	Financial Statement Analysis	3
BUSI 263	International Finance	3

### Marketing Electives

BUSI 241	Marketing Research	3
BUSI 246	Marketing of Services	3
BUSI 247	Consumer Behavior	3
BUSI 293	Special Topics	4

### Entrepreneurship Electives

BUSI 221	Entrepreneurial Finance	3
BUSI 275	Technology and Innovation	3
BUSI 293	Special Topics	4

### Healthcare Management Electives

BUSI 250	Health Finance: Health Insurance	3
BUSI 251	International Healthcare Systems	3
BUSI 252	Healthcare Law	3
BUSI 254	Health Economics	4
BUSI 293	Special Topics	4

### Sport Management Electives

HESP 265	Advanced Sports Law	4
HESP 269	Advanced Management of Sport Enterprises	4
HESP 274	Advanced Sport Marketing and Promotions	4
HESP 275	Advanced Sport Management	4
HESP 287A	Advanced Internship: Sport Management	4

## Master of Business Administration - Part Time Program

Students must complete a minimum of 51 units with a Pacific cumulative grade point average of 3.0 to earn the master of business administration degree.

## I. Course Requirements

### First Fall Semester

BUSI 201	Financial and Managerial Accounting	3
BUSI 205	Fundamentals of Finance	3

### First Spring Semester

BUSI 200	Management Information Systems	2
BUSI 206	Data and Decisions	2
BUSI 209	Organizational Behavior	2

### First Summer Session

BUSI 207	Marketing Management	2
BUSI 208	Managerial Economics	2

### Second Fall Semester

BUSI 214	Negotiation	2
BUSI 279	Leadership	2

MBA Elective	3
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### Second Spring Semester

BUSI 220	Corporate Finance	3
BUSI 265	Global Marketing Strategy	3

### Second Summer Session

MBA Elective	3
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### Third Fall Semester

BUSI 213	Ethics and Corporate Social Responsibility	3
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MBA Elective	3
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### Third Spring Semester

BUSI 274	Managing Quality/Productivity	3
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BUSI 276	Entrepreneurial Management	3
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### Third Summer Session

BUSI 268	Global Business Competition	3
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### Fourth Fall Semester

BUSI 212	MBA Career Development Seminar	1
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BUSI 281	Strategic Management	3
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MBA Elective	3
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<b>Total Hours</b>	<b>54</b>
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## Electives

The part time MBA includes electives in Finance, Marketing, Entrepreneurship, Sport Management, and Healthcare Management.

### Finance Electives

BUSI 221	Entrepreneurial Finance	3
BUSI 222	Student Investment Fund	3
BUSI 223	Investment Management	3
BUSI 226	Financial Statement Analysis	3
BUSI 263	International Finance	3

### Marketing Electives

BUSI 241	Marketing Research	3
BUSI 246	Marketing of Services	3
BUSI 247	Consumer Behavior	3
BUSI 293	Special Topics	4

### Entrepreneurship Electives

BUSI 221	Entrepreneurial Finance	3
BUSI 275	Technology and Innovation	3
BUSI 293	Special Topics	4

### Healthcare Management Electives

BUSI 250	Health Finance: Health Insurance	3
BUSI 251	International Healthcare Systems	3
BUSI 252	Healthcare Law	3
BUSI 254	Health Economics	4
BUSI 293	Special Topics	4

### Sport Management Electives

HESP 265	Advanced Sports Law	4
HESP 269	Advanced Management of Sport Enterprises	4
HESP 274	Advanced Sport Marketing and Promotions	4
HESP 275	Advanced Sport Management	4
HESP 287A	Advanced Internship: Sport Management	4

# Master of Business Administration - Sacramento Program

Students must complete a minimum of 36 units with a Pacific cumulative grade point average of 3.0 to earn the master of business administration degree.

## I. Course Requirements

### Year 1

Fall		
MBAS 230	Accounting for Managers	3
MBAS 285	Leading and Managing Organizations	3
Spring		
MBAS 203	Decision Making and Analytics	3
MBAS 286	Innovation and Entrepreneurial Management	3
Summer		
MBAS 240	Financial Management	3
MBAS 255	Marketing Management	3
Year 2		
Fall		
MBAS 287	Power, Conflict, and Negotiations	3
MBAS 288	Service Design and Operations Management	3
Spring		
MBAS 290	Strategic Management	3
One Elective Course		3
Summer		
Two Elective Courses		6

Note: The program will offer electives in healthcare management and in general business.

## 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 earn 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	4
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.

## I. General Education Requirements (for students starting as Freshmen):

PACS 001	What is a Good Society	4
PACS 002	Topical Seminar on a Good Society	4
PACS 003	What is an Ethical Life?	3

**Note: 1) Pacific Seminars cannot be taken for Pass/No Credit. 2) Transfer students with 28 or more transfer units complete 2 additional General Education elective courses from IC and IIIC.**

One course from each subdivision below:

### Social and Behavioral Sciences

- IA. Individual and Interpersonal Behavior (ECON 053)
- IB. U.S. Studies (ECON 055)
- IC. Global Studies (Transfers only)

### Arts and Humanities

- IIA. Language and Literature (ENGL 025 or COMM 027)
- IIB. Worldviews and Ethics
- IIC. Visual and Performing Arts

### Natural Sciences and Mathematics

- IIIA. Natural Sciences
- IIIB. Mathematics and Formal Logic (MATH 045 or MATH 051)
- IIIC. Science, Technology and Society (Transfers only) or a second IIIA Natural Sciences course (Transfers only)

**Note: 1) No more than 2 courses from a single discipline may be applied to meet the requirements of the general education program**

## II. Diversity Requirement

Students must complete one diversity course (3-4 units)

**Note: 1) Transfer students with 28 units or more transfer units prior to fall 2011 are encouraged but not required to complete a designated course prior to graduation. 2) Courses may be used also to meet general education and/or major/minor requirements.**

## III. Fundamental Skills

Students must demonstrate competence in:

- Writing
- Quantitative analysis

## IV. Pre-professional Skills Requirements

### Advanced Writing

Select one of the following:	4
BUSI 023 Business Communications	
ENGL 025 English 25 *	

### Public Speaking

COMM 027 Public Speaking *	3
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### Mathematics

MATH 045 Introduction to Finite Mathematics and Calculus *	4
MATH 037 Introduction to Statistics and Probability	4

### Computer Literacy

COMP 025	Computers and Information Processing *	4
<b>Economics</b>		
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.

## V. 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 109	Management and Organizational Behavior	4
BUSI 110	Career and Development Seminar	1

**Note:** 1) BUSI 274 below is substituted for BUSI 104. 2) BUSI 281 below is substituted for BUSI 181.

## VI. 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 125	Intermediate Financial Management	4
BUSI 157	Commercial Law	4
Electives - May be undergraduate and/or graduate courses		10-17

## VII. Master of Accounting Requirements

BUSI 213	Ethics and Corporate Social Responsibility	3
BUSI 214	Negotiation	2
BUSI 215	Taxation of Business Entities	3
BUSI 216	Professional Accounting Research	2
BUSI 217	Ethics for Professional Accountants	3
BUSI 218	Advanced Financial Accounting Graduate Level	3
BUSI 226	Financial Statement Analysis	3
BUSI 279	Leadership	2
BUSI 281	Strategic Management	3
Select one of the following:		3
BUSI 219	Graduate Auditing Seminar	
BUSI 227	Forensic Accounting and Fraud Investigation	
Select one of the following:		3
BUSI 228	Supply Chain Financial Management	
BUSI 274	Managing Quality/Productivity	

## 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 214	Negotiation	2
BUSI 215	Taxation of Business Entities	3
BUSI 216	Professional Accounting Research	2
BUSI 217	Ethics for Professional Accountants	3
BUSI 218	Advanced Financial Accounting Graduate Level	3
BUSI 226	Financial Statement Analysis	3
BUSI 279	Leadership	2
BUSI 281	Strategic Management	3
Select one of the following:		3
BUSI 219	Graduate Auditing Seminar	
BUSI 227	Forensic Accounting and Fraud Investigation	
Select one of the following:		3
BUSI 228	Supply Chain Financial Management	
BUSI 274	Managing Quality/Productivity	

## Doctor of Pharmacy/Master of Business Administration Joint Degree

**PharmD/MBA:** This joint-degree program allows students interested in management positions in the pharmaceutical, biotechnology, and healthcare industries to develop the needed expertise. Both degrees can be completed in four years, regardless of academic background. Students interested in this program must apply and be accepted by both the MBA and Doctor of Pharmacy programs separately. Please see MBA application for special instructions.

The Eberhardt School of Business PharmD/MBA is modeled after the 16-month MBA. Students spend one year as a member of a full-time MBA cohort before beginning their pharmacy studies. Students then return to the Eberhardt School of Business MBA program in the fall of their third year for a two-unit capstone MBA course.

Students must complete a minimum of 51 units with a cumulative grade point average of 3.0 in order to earn the PharmD/MBA degrees.

### First Year Fall Semester

BUSI 255	Applied Business Principles	14
BUSI 254	Health Economics	4

### First Year Spring Semester

BUSI 250	Health Finance: Health Insurance	3
BUSI 276	Entrepreneurial Management	3
BUSI 265	Global Marketing Strategy	3
BUSI 274	Managing Quality/Productivity	3

MBA Electives

<b>First Year Summer Session</b>		
BUSI 268	Global Business Competition	3

### Second Year Fall, Winter, and Spring

Pharmacy Curriculum *		1
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### Third Year Fall Semester

BUSI 281	Strategic Management	3
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Pharmacy Curriculum

### Third Year Winter and Spring Semester

Pharmacy Curriculum *		2
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### Fourth Year Fall, Winter and Spring Semester

Pharmacy Curriculum *	6
Total Hours	51

- \* Nine units of MBA credit is awarded for the following pharmacy (PHRM) courses:
- PHRM 111 Pharmacy Practice and Professionalism
  - PHRM 152 Pharmacy Law and Ethics
  - PHRM 161 Pharmacy Management
  - PHRM 173 Hospital Pharmacy APPE
  - PHRM 174 Community Pharmacy APPE

## Juris Doctorate/Master of Business Administration Joint Degree

*Joint-degree JD/MBA Program:* The joint-degree JD/MBA Program allows students to complete their three-year law degree at Pacific's McGeorge School of Law and the 16-month Eberhardt MBA Program together in only four years. To combine the two programs, students can count up to 24 units of course credit toward both degrees. Students interested in the joint-degree JD/MBA Program must apply and be accepted by both the MBA Program and the Law Program separately.

Contact the MBA Program Office for a sample Plan of Study.

## Master of Business Administration Peace Corps International Program

*Peace Corps Masters International MBA Program:* Masters Internationalist students complete a portion of their studies on campus prior to entering the Peace Corps. Students then leave for a Peace Corps assignment that includes language, technical and cross-cultural training. After completing a Peace Corps assignment, students return to campus for a semester to complete their degree. All returned Peace Corps volunteers receive a stipend from the Peace Corps for their volunteer service. Students interested in the Masters International Program must apply and be accepted by both the MBA Program and the Peace Corps separately.

Contact the MBA Program Office for a sample plan of study.

## 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: BUSI 031, BUSI 033, ECON 053, ECON 055, MATH 037, MATH 045 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: BUSI 031, ECON 053, ECON 055, MATH 037, MATH 045. 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 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 and BUSI 033 both with a "C" or better; MATH 037. 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. Legal Aspects of Real Estate. 4 Units.**

Students study the legal aspects that concern real estate and real estate transactions. Topics include deeds, listing agreements, title insurance, real estate contracts, closing, property taxation, land use regulations and landlord-tenant relationships. Prerequisite: BUSI 053. Junior standing.

(PLAW)

**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. Prerequisite: BUSI 100 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 with a "C" or better and MATH 037. 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 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. Strategic Marketing. 4 Units.**

Students are introduced to the strategic marketing process, that includes the analysis of marketing situations, identification of problems, determination of solutions, implementation of corrective action, and planning strategy. Prerequisites: BUSI 105 and BUSI 141 both with a "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 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 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 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, response 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. 2 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: BUSI 113A, BUSI 113B, and BUSI 115 or equivalent courses and acceptance into the MAcc or the BSMA.

**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 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 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.**

# GLADYS L. BENERD SCHOOL OF EDUCATION

www.pacific.edu/education

Phone: (209) 946-2556

Location: Gladys L. Benerd School of Education

Vanessa Sheared, Dean

## Programs Offered

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

- Curriculum and Instruction
- Teaching (credential option)
- Special Education
- Educational Entrepreneurship
- Educational Leadership (K-12; credential option)
- Educational and Organizational Leadership
- Organizational Learning and Effectiveness
- Student Affairs
- Counseling Psychology

### Educational Specialist (EdS)

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

### Doctor of Education (EdD) in Education with specialization and/or cognate concentrations in:

- Curriculum and Instruction
- Special Education
- Educational Leadership (K-12)
- Educational and Organizational Leadership
- Counseling Psychology
- Organizational Learning and Effectiveness
- Research Methods
- Social and Educational Entrepreneurship

## Credentials Offered

### Preliminary Multiple Subject Credential

### Preliminary Single Subject Credential in the following areas:

- Art, Biology, Chemistry, English, Geosciences, Social Sciences, Mathematics, Physical Education, Physics, Sciences, Spanish, and Music.
- Educational Specialist (mild/moderate) – Preliminary
- Educational Specialist (moderate/severe) – Preliminary

### Services credentials in the following categories:

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

## Mission

The Benerd School of Education embraces a mission to prepare thoughtful, reflective, caring, and collaborative educational professionals for service to diverse populations. Further, the Benerd School of Education directs its efforts toward researching the present and future

needs of schools and the community, fostering intellectual and ethical growth, and developing compassion and collegiality through personalized learning experiences.

## Admissions Requirements

### General Admissions Requirements

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 School, 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 the School of Education.

## Basic Education Policies

### Master of Arts Degree

Graduate students who wish to secure a Master of Arts degree with a major in the School of Education must meet the requirements specified for all Master of Arts degrees. Students should consult with the assigned departmental advisor within the first semester of enrollment to develop a plan of study. The Gladys L. Benerd School of Education offers one Master of Arts degree 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 the School of Education must meet the

requirements specified for all Doctor of Education degrees. Students should consult with the assigned departmental advisor within the first semester of enrollment to develop a plan of study. The Gladys L. Benerd School of Education has three departments that offer the EdD degree: the Department of Curriculum and Instruction, the Department of Educational Administration and Leadership, and the Department of Educational and School Psychology. Although there is only one EdD degree, students may elect a specialization concentration and one or more cognate concentrations. Candidates who seek EdD degrees must also complete a doctoral dissertation and register for a minimum of 2 and a maximum of 5 units of EDUC 399. 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 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 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 C & I department 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/Curriculum and Instruction department 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 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. Senior standing or permission of instructor.

**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/C & I department 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/C & I department 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 Curriculum and Instruction Department'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 Curriculum and Instruction Department'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. (DVSY, 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 department chair.

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

Consent of department chair.

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

Consent of department chair.

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

Permission of department chair.

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

Permission of department chair.

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

Permission of department chair.

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

Permission of department chair.

**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 department chair.

**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. Pluralism in American Education. 3 Units.**

This course is a multi-disciplinary examination of the effects of cultural and social pluralism on educational policy, philosophy, classroom instruction and professional ethics in American public education, both historically and as contemporary issues. (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 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 235. Design Thinking for Organizational Analysis. 3 Units.**

This course engages students in design thinking as a framework to collaboratively analyze and learn about an organizational challenge to facilitate the ultimate development of organizational innovation.

**EDUC 236. Prototyping for Organizational Improvement. 3 Units.**

Immerses students in the design thinking process to engage clients in collaboratively prototyping solutions for organizational improvement. Prerequisite: EDUC 235.

**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 238. Organizational Change and Consulting. 3 Units.**

This course provides knowledge and skills necessary to understand and facilitate the implementation of change in organizations. Emphasis will be on both theoretical and practical aspects of organizational change, with particular emphasis on developing hands-on consulting skills.

**EDUC 239. 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.

**EDUC 240. Introduction to Student Affairs. 3 Units.**

This course is a comprehensive introduction and overview of student affairs and functions within institutions of higher education. Emphasis is on studying the history and evolution of the student affairs movement, gaining an understanding of the multiple roles of the student affairs practitioner, creating an awareness of the best practices in student personnel, and developing knowledge of current issues regarding students and student services functions in higher education.

**EDUC 241. Student Identity Development Theory. 3 Units.**

This course is a forum for students to critically examine and evaluate traditional theories of student development, as well as current social identity concepts and contexts. Research and implications for practice will be explored. The course content includes projects that link theory to application.

**EDUC 242. College Student Environment. 3 Units.**

Students examine the characteristics and attitudes of traditional and non-traditional American college students and the effect of the college environment on students. Students study the historical and contemporary characteristics of students, understand the characteristics and needs of various sub-populations, and research the effects of college and its environments on students.

**EDUC 243. Legal Issues in Higher Education Student Affairs. 3 Units.**

This course provides an overview of legal issues in American higher education, specifically those related to Student Affairs. This course is designed to ensure that students have the opportunity to learn basic legal principles necessary to function in an administrative or managerial capacity in post-secondary institutions. Administrative arrangements, policy issues, and case law are reviewed and discussed.

**EDUC 244. Assessment in Student Affairs. 3 Units.**

Study of the elements of program assessment with an emphasis on models for practice in co-curricular programs. Emphasis is on practical and collaborative applications in university settings as well as analysis and critical reflection on assessment trends and movements.

**EDUC 245. Counseling Theories in College Student Affairs. 3 Units.**

This course offers a critical and comprehensive study of current counseling theories and their application for student affairs practitioners.

**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 Secondary Classrooms. 3 Units.**

Core course concepts and activities include 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/Curriculum and Instruction department 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 grad of C or higher is required for passing this course. Prerequisites: EDUC 140; minimum 2.5 GPA; 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/C & I department 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. Teaching as Reflective Inquiry II. 2 Units.**

Teaching as Reflective Inquiry II is the second of a three-part course in which preservice teachers continue to learn and apply the principles of teacher research. Participants examine their teaching practices and generate inquiry questions that examine their impact on student achievement in their year-long professional practice placements (student teaching). This semester's emphases include the development of research questions, research methods, design and data collection that lead to a year-long study.

**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 Curriculum and Instruction Department'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 Curriculum and Instruction Department's Director of Field Experiences for an additional concurrent course. Corequisite: CURR 195X, SPED 125X.

**EDUC 285. Educational Leadership. 3 Units.**

Students examine functions, responsibilities and relationships of the school principal. Emphasis is on instructional leadership, leadership styles, human relations skills, working with school-community task groups and forces, public relations, needs assessment, decision-making analysis and computers as a management tool.

**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. Educational and Social Entrepreneurship. 3 Units.**

This course examines and defines educational and social entrepreneurship. Engages students in action-oriented research of current educational and social enterprises to consider how to create social impact.

**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 department chair.

**EDUC 290. Technology in Educational Administration. 3 Units.**

In this course student explore a variety of technological applications related to educational administration, teaching, and learning.

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

Graduate students may enroll in library research with consent of the department chair.

**EDUC 292. Advanced Fieldwork. 1-6 Units.**

Prerequisite: Consent of the department chair.

**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 department.

**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 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 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 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 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. Contemporary Issues in Schooling and Education. 3 Units.**

The intent of this course is to further inquiry into the ways in which school policies and practices have historically been initiated and implemented. In addition attention is paid to the role teachers and students play in the operationalizing of policies and research-based practices. Attention to review of pertinent readings is also emphasized.

**EDUC 316. Interdisciplinary Curriculum Inquiry. 3 Units.**

This course is designed to engage doctoral students in understanding the interrelationships between content areas and how teaching and learning are manifested through the use of interdisciplinary curricular strategies.

**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. Curriculum Analysis. 3 Units.**

Development of specific skills necessary for in-depth, formal analysis of any given Curriculum, focusing on origins, theoretical perspectives, implementation, enactment, and evaluation.

**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 Research Design and Methods. 3 Units.**

This course focuses on methods of designing and conducting qualitative research in education. Topics include: characteristics of qualitative research, data collection and analysis, determining validity and reliability, and ethical issues related to qualitative research. Students will engage in qualitative research at off-campus field sites. This course is a component in the set of research courses required for all Ed.D. students. Prerequisites: EDUC 201 with a "B" or better or equivalent and EDUC 202.

**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. Prerequisite: EDUC 202.

**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 Marriage and Family Therapy. 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.

**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. Data-Based Decision Making I: Behavioral Assessment and Intervention. 3 Units.**

This course introduces the graduate student to the systematic processes used by school psychologists and educators to collect and analyze data and write an intervention plan. For students in the School Psychology program, this course is accompanied by one unit of EDUC 396 School Psychology Field Work. Students will learn various methods of data collection, including interviews, systematic observations, and review of records, designing interventions, implementing interventions, and analyzing interventions. Particular attention is given to collecting and analyzing behavioral data within a response to intervention (RTI) framework.

**EDUC 345. Data-Based Decision Making II: Academic Assessment and Intervention. 3-4 Units.**

This course introduces graduate students to the systematic processes used by school psychologists, educators, mental health professionals and other school personnel to collect and analyze academic data and design and implement academic interventions. Students 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 response to intervention (RTI) framework.

**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. 2 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. Models of Epistemology and Inquiry. 3 Units.**

This course addresses the epistemological frameworks that support and inform any systematic process of inquiry. The focus is not so much on how research is conducted (an issue of methodology) but more on how a researcher thinks about the world and about the process of knowing (an issue of theory and mode of inquiry) in educational administration and in other educational fields. Prerequisite: Graduate Status.

**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. Seminar: Trends, Issues and Dynamics of Change. 3 Units.**

Students examine current issues and the impact of change in administration of educational programs.

**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 362. Seminar: Administration of Instructional Programs. 3 Units.**

The seminar course covers instructional leadership, staff development, educational program planning/evaluation, curriculum designs and instructional delivery strategies, monitoring and evaluating student progress, and the use of instructional time and resources.

**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. Seminar: Educational Policy Making and Politics. 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.

**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. Seminar: Marketing and Public Relations in Education. 3 Units.**

Techniques of effective communications in educational organizations are presented. Developing and maintaining positive public relations and public support for educational problems are emphasized.

**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 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 department chair.

**EDUC 396. School Psychology Fieldwork. 1-4 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 398. School Psychology Internship. 1-4 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 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. Prerequisite: admission to Teacher Education; fingerprint review and clearance at local districts; TB test clearance (there is a fee for these services).

**EPSY 191. Independent Study. 1-3 Units.**

Permission of department chair is required.

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

Prerequisite: Consent of the department chair.

**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 department chair.

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

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

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

## **Special Education Courses**

**SPED 123. The Exceptional Child. 3 Units.**

Description of the characteristics and needs of children and youth with disabilities. Exploration of the etiology, treatment, educational strategies, social and vocational opportunities for individuals with disabilities. Ten hours of field experience will be required as part of the course content. This course satisfies the requirements for clearing a preliminary multiple and single subject credential as specified by the California Commission on Teacher Credentialing. (CTCC).

**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 method-based course is for candidates who will be teaching students with disabilities in the general education classroom, and it includes techniques and strategies for individualizing specific student needs. The course content reviews special education law and the inclusive schools movement. Taken concurrently with Directed Teaching. Prerequisite: admission to Teacher Education (Credential Candidacy). Fingerprint and TB test clearance.

**SPED 128M. Advanced Programming for Students with Mild/Moderate Disabilities. 3 Units.**

Theoretical and applied information that pertains to the characteristics and educational needs of students with mild to moderate disabilities is presented. 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 128S. Advanced Programming for Students with Moderate/Severe Disabilities. 3 Units.**

This course presents theoretical and applied information that pertains to specialized health care and sensory needs as well as educational characteristics for students with moderate/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 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 examined. Ten hours of field experience is required as part of the course content.

**SPED 191. Independent Study. 1-4 Units.**

Permission of department chair 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. Prerequisites: 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 Special Education Coordinator or Department Chair of Curriculum and Instruction.

**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 228M. Advanced Programming for Students with Mild/Moderate Disabilities. 3 Units.**

Theoretical and applied information that pertain to the characteristics and educational needs of students with mild to moderate disabilities are presented. 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, SPED 166 and admission to Teacher Education/Credential Candidacy or permission of Special Education Coordinator or Department Chair of Curriculum and Instruction.

**SPED 228S. Advanced Programming for Students with Moderate/Severe Disabilities. 3 Units.**

Theoretical and applied information that pertain to specialized health care and sensory needs as well as educational characteristics for students with moderate/severe disabilities are presented. 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, SPED 166 and admission to Teacher Education/Credential Candidacy or permission of Special Education Coordinator or Department Chair of Curriculum and Instruction.

**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 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 Special Education coordinator or department Chair.

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

This course presents theoretical and applied information that pertain 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 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/Credidacy or permission of Special Education.

**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 291. Independent Graduate Study. 1-3 Units.**

#### **SPED 293. Special Project. 1-3 Units.**

Prerequisite: Consent of the department chair.

#### **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 Special Education coordinator or department chair.

#### **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 Director of Special Education.

#### **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 Director of Special Education.

#### **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.**

## **Master of Arts**

[www.pacific.edu/Academics/Schools-and-colleges/Gladys-L-Benerd-School-of-Education/Academics/Masters](http://www.pacific.edu/Academics/Schools-and-colleges/Gladys-L-Benerd-School-of-Education/Academics/Masters)

Location: Gladys L. Benerd School of Education

## **Degree Program**

### **Master of Arts in Education**

Concentrations are offered from the following departments:

#### **Curriculum and Instruction**

- Curriculum and Instruction
- Teaching (Credential Option)
- Special Education

#### **Educational Administration and Leadership**

- Educational Leadership (K-12) (Credential Option)
- Educational Entrepreneurship
- Educational and Organizational Leadership
- Organizational Learning and Effectiveness
- Student Affairs

#### **Educational and School Psychology**

- Counseling Psychology

## **Admissions Requirement**

1. A cumulative GPA of 3.0 or better for 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 the Graduate School, 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 that attests to the candidate's ability to undertake graduate studies
4. Departmental interview, if required.
5. Evidence of qualities and character in keeping with the philosophy and standards of this University and the School of Education

For experienced educators who desire to prepare for positions as supervisors, consultants, vice principals, principals, or district office staff, the School of Education offers programs meeting the requirements for the Preliminary Services Credentials. The 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.

### **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.

## 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 School of Education, 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.

### I. Theoretical Core:

Select one of the following: 2-4

EDUC 140	Transformational Teaching and Learning
EDUC 154/254	Productive Learning Environments for Diverse Secondary Classrooms
EDUC 204	Pluralism in American Education
EDUC 220	Seminar: Social Class Effects in Education
EDUC 230	Leading in Diverse Contexts

Select one of the following: 2-4

EDUC 150	Teaching and Assessment
EDUC 167/267	Adolescent Development
EDUC 209	Curriculum Theory
EDUC 216	Nature and Conditions of Learning
EDUC 237	Organizational Learning

### 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 Teaching as Reflective Inquiry II 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	Professional Practice
or EDUC 171/271	Professional Practice Music
SPED 198M & SPED 298M	Directed Teaching: Mild/Moderate and Directed Teaching: Special Education (Mild/Moderate)
or SPED 198S/298S	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). 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.

#### Core Area Concentrations

##### Educational Entrepreneurship

EDUC 215	Creativity and Ideation	3
EDUC 279	Innovation in Education	3
EDUC 287	Educational and Social Entrepreneurship	3
EDUC 377	Design Thinking & Lean Startup for Social Impact	3

##### Educational Leadership (K-12) (Credential Option)

EDUC 285	Educational Leadership	3
Select 9 units of the following:		9

EDUC 212	Instructional Strategies and Classroom Process
EDUC 214	Supervision of Instruction
EDUC 278	Educational Organization and Diverse Constituencies
EDUC 280	Education Law and Legal Processes
EDUC 283	School Finance and Business Administration
EDUC 286	Administration of Human Resources
EDUC 291	Graduate Independent Study
EDUC 292	Advanced Fieldwork
EDUC 292E	Field Experience in Administration and Supervision
EDUC 295C	Seminar: Educational Planning, Delivery, Assessment

##### Educational and Organizational Leadership

EDUC 285	Educational Leadership	3
Select 9 units of the following:		9

EDUC 212	Instructional Strategies and Classroom Process
EDUC 214	Supervision of Instruction
EDUC 240	Introduction to Student Affairs
EDUC 241	Student Identity Development Theory
EDUC 243	Legal Issues in Higher Education Student Affairs
EDUC 244	Assessment in Student Affairs
EDUC 277	Diversity and Constituency in Educational Administration
EDUC 278	Educational Organization and Diverse Constituencies
EDUC 280	Education Law and Legal Processes
EDUC 283	School Finance and Business Administration
EDUC 286	Administration of Human Resources

EDUC 290	Technology in Educational Administration	
EDUC 291	Graduate Independent Study	
EDUC 292E	Field Experience in Administration and Supervision	
EDUC 295C	Seminar: Educational Planning, Delivery, Assessment	

**Organizational Learning and Effectiveness**

EDUC 235	Design Thinking for Organizational Analysis	3
EDUC 236	Prototyping for Organizational Improvement	3
EDUC 238	Organizational Change and Consulting	3
EDUC 372	Program and Organization Evaluation	3

**Student Affairs**

EDUC 240	Introduction to Student Affairs	3
EDUC 241	Student Identity Development Theory	3
EDUC 244	Assessment in Student Affairs	3
EDUC 292C	Student Affairs Field Experience	1-3

Select 9 units of the following: 9

EDUC 243	Legal Issues in Higher Education Student Affairs	
EDUC 245	Counseling Theories in College Student Affairs	
EDUC 278	Educational Organization and Diverse Constituencies	
EDUC 283	School Finance and Business Administration	
EDUC 285	Educational Leadership	
EDUC 286	Administration of Human Resources	
EDUC 291	Graduate Independent Study	
EDUC 299	Master's Thesis	

**Educational 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 340	Introduction to School Psychology	
EDUC 341	History and Systems in Psychology	
EDUC 343	Psychopathology and Wellness Promotion	
EDUC 344	Data-Based Decision Making I: Behavioral Assessment and Intervention	
EDUC 345	Data-Based Decision Making II: Academic Assessment and Intervention	
EDUC 348	Neuropsychology	
EDUC 350	Social Psychology	

**Human Development**

Select 12 units of the following: 12

EDUC 330	Advanced Human Development I	
EDUC 331	Advanced Human Development II	
EDUC 332	Advanced Human Development III	
EDUC 337	Crisis Intervention	
EDUC 343	Psychopathology and Wellness Promotion	
EDUC 348	Neuropsychology	
EDUC 386	Child Abuse Assessment and Reporting	
EDUC 387	Human Sexuality	

**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 Marriage and Family Therapy	
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	Data-Based Decision Making I: Behavioral Assessment and Intervention	
EDUC 345	Data-Based Decision Making II: Academic Assessment and Intervention	
EDUC 348	Neuropsychology	
EDUC 350	Social Psychology	

**Curriculum and Instruction**

Select 12 units of the following: 12

EDUC 212	Instructional Strategies and Classroom Process	
EDUC 214	Supervision of Instruction	
EDUC 221	Research in Second Language Acquisition	
EDUC 221	Research in Second Language Acquisition	
EDUC 225	Psychology of Reading	
EDUC 241	Student Identity Development Theory	
EDUC 246	Teaching as Reflective Inquiry I	
EDUC 260	Productive Learning Environments for Diverse Classrooms	
EDUC 266	Teaching as Reflective Inquiry II	
EDUC 276	Teaching as Reflective Inquiry III	
EDUC 278	Educational Organization and Diverse Constituencies	
EDUC 282	Advanced Curriculum and Theory in Early Childhood Education	
EDUC 285	Educational Leadership	
EDUC 291	Graduate Independent Study	
EDUC 295A	Seminar: Middle School Curriculum	
EDUC 295B	Seminar: Secondary Curriculum	
EDUC 295E	Seminar: Teaching Reading and Writing	
EDUC 295G	Seminar: Elementary Curriculum	
SPED 295A	Seminar: Crucial Issues in Special Education	

**Teaching (Credential Option)**

Select 12 units of the following: 12

EDUC 130	Technology Enhanced Learning Environments *	
EDUC 153	Teaching Science, Technology, Engineering, and Mathematics *	
EDUC 160	Productive Learning Environments for Diverse Classrooms *	
EDUC 161	Literacy Development (Multiple Subject) *	
EDUC 163	Teaching English Learners	
EDUC 166	Teaching English Learners, Single Subject	
EDUC 172	Professional Practice Seminar	
EDUC 246	Teaching as Reflective Inquiry I	

EDUC 254	Productive Learning Environments for Diverse Secondary Classrooms
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	Teaching as Reflective Inquiry II
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 123	The Exceptional Child
SPED 125X	Teaching Exceptional Learners
SPED 166	Building Family-Professional Partnerships
SPED 224	Assessment of Special Education Students *
SPED 228M	Advanced Programming for Students with Mild/Moderate Disabilities
or SPED 228S	Advanced Programming for Students with Moderate/Severe Disabilities
SPED 231	Evidence Based Practices in Autism Spectrum Disorder
SPED 242M	Curriculum and Instruction for Students with Mild/Moderate Disabilities *
or SPED 242S	Curriculum and Instruction for Students with Mild/Moderate 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 166	Building Family-Professional Partnerships
SPED 224	Assessment of Special Education Students
SPED 228M	Advanced Programming for Students with Mild/Moderate Disabilities
SPED 228S	Advanced Programming for Students with Moderate/Severe 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 242S	Curriculum and Instruction for Students with Mild/Moderate 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 School of Education**

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

## Doctorate of Education

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

### Degree Program

#### Doctorate of Education

Concentrations (Specializations/Cognates) are offered from the following departments:

#### Curriculum and Instruction

- Curriculum and Instruction
- Special Education

#### Educational Administration and Leadership

- Educational Leadership (K-12)
- Educational and Organizational Leadership

#### Educational and School Psychology

- Counseling Psychology (Psychologist License Eligible)

#### Additional Concentration (Cognate) available

- Research Methods
- Social and Educational Entrepreneurship
- Organizational Learning and Effectiveness

### 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 (masters for admission to doctoral programs).
3. A completed application portfolio to the Graduate School, 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 that attests to the candidate's ability to undertake doctoral studies.
4. Departmental interviews are required for the EdD program.
5. Evidence of qualities and character in keeping with the philosophy and standards of this University and the School of Education.
6. Some programs may have additional requirements. Please contact the Department Chair for that program for additional information.

For experienced educators who desire to prepare for positions as supervisors, consultants, vice principals, principals, or district office staff, the School of Education offers programs meeting the requirements for the Preliminary Administrative Services Credential. The credential programs may be combined with the master's degree or the doctorate in education.

## Program Stages

The successful completion of EDUC 356 (Option A) or EDUC 327 (Option B) with the production of a quality problem statement and literature review 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 School of Education 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.

## 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 nine years after the first day of the semester of enrollment in EdD coursework at Pacific as a provisionally admitted doctoral student. Failure to complete within nine years requires the student to petition the department and the Graduate School for continuation in the doctoral program. If the petition is approved, the student will be required to register for five additional units of EDUC 399 Dissertation. 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 School of Education 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.

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 the School of Education.

## 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, administration 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 Research Design and Methods	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 concentration (specialization and/or cognate), students must fulfill the general requirements listed above as well as specific concentration (specialization and/or cognate) requirements listed below.

A single course may be used to fulfill requirements in two or more specializations and/or cognates.

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 School of Education.

## Specialization Concentrations

### Educational Leadership (K-12)

Select 18 units from the following Specialization courses: 18

EDUC 278	Educational Organization and Diverse Constituencies
EDUC 280	Education Law and Legal Processes
EDUC 283	School Finance and Business Administration
EDUC 285	Educational Leadership
EDUC 286	Administration of Human Resources
EDUC 295C	Seminar: Educational Planning, Delivery, Assessment
EDUC 360	Seminar: Trends, Issues and Dynamics of Change
EDUC 361	Seminar: Ethics, Law and Finance
EDUC 362	Seminar: Administration of Instructional Programs
EDUC 364	Seminar: Educational Policy Making and Politics
EDUC 366	Seminar: Marketing and Public Relations in Education
EDUC 367	Seminar: Leadership in Diverse Organizations
EDUC 368	Seminar: Leading Complex Organizations
EDUC 372	Program and Organization Evaluation

### Educational and Organizational Leadership

Select 18 units from the following Specialization courses: 18

EDUC 360	Seminar: Trends, Issues and Dynamics of Change
EDUC 363	Seminar: Personnel Issues
EDUC 364	Seminar: Educational Policy Making and Politics
EDUC 365	Seminar: Administration of Higher Education
EDUC 367	Seminar: Leadership in Diverse Organizations
EDUC 368	Seminar: Leading Complex Organizations
EDUC 372	Program and Organization Evaluation
EDUC 380	Leading Innovation
EDUC 381	Law in Higher Education
EDUC 382	Leadership in Higher Education

### Special Education

Select 18 units from the following Specialization courses: 18

EDUC 304	Program Evaluation
SPED 228M	Advanced Programming for Students with Mild/Moderate Disabilities
SPED 228S	Advanced Programming for Students with Moderate/Severe Disabilities
SPED 295E	Positive Behavioral Support in the Classroom
SPED 395A	Seminar: Crucial Issues in Special Education

Or an approved course by the advisor

### Curriculum and Instruction

Select 18 units from the following Specialization courses: 18

EDUC 204	Pluralism in American Education
EDUC 212	Instructional Strategies and Classroom Process
EDUC 304	Program Evaluation
EDUC 306	Curriculum Materials Development
EDUC 308	Issues in Curriculum and Instruction
EDUC 314	Contemporary Issues in Schooling and Education
EDUC 316	Interdisciplinary Curriculum Inquiry
EDUC 319	Curriculum Analysis

EDUC 320	Advanced Curriculum Studies
EDUC 321	Writing for Publication
EDUC 360	Seminar: Trends, Issues and Dynamics of Change

### Counseling Psychology (Psychology license eligible)

Select 18 units from the following Specialization courses: 18

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 Marriage and Family Therapy
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	Data-Based Decision Making I: Behavioral Assessment and Intervention
EDUC 345	Data-Based Decision Making II: Academic Assessment and Intervention
EDUC 346	Psychological Assessment
EDUC 347	Behavior and Personality Assessment
EDUC 348	Neuropsychology
EDUC 350	Social Psychology

## Cognate Concentrations

### Educational Leadership (K-12)

Select 12 units from the following Cognate courses: 12

EDUC 360	Seminar: Trends, Issues and Dynamics of Change
EDUC 361	Seminar: Ethics, Law and Finance
EDUC 362	Seminar: Administration of Instructional Programs
EDUC 363	Seminar: Personnel Issues
EDUC 367	Seminar: Leadership in Diverse Organizations

### Educational and Organizational Leadership

EDUC 365	Seminar: Administration of Higher Education	3
EDUC 367	Seminar: Leadership in Diverse Organizations	3
EDUC 381	Law in Higher Education	3
EDUC 382	Leadership in Higher Education	3

### Special Education

Select 12 units from the following Cognate courses: 12

SPED 228M	Advanced Programming for Students with Mild/Moderate Disabilities
SPED 228S	Advanced Programming for Students with Moderate/Severe Disabilities
SPED 295E	Positive Behavioral Support in the Classroom
SPED 393A	Special Topics
SPED 395A	Seminar: Crucial Issues in Special Education

### Curriculum and Instruction

Select 12 units from the following Cognate courses: 12

EDUC 306	Curriculum Materials Development
EDUC 308	Issues in Curriculum and Instruction
EDUC 314	Contemporary Issues in Schooling and Education

EDUC 316	Interdisciplinary Curriculum Inquiry	
EDUC 319	Curriculum Analysis	
EDUC 360	Seminar: Trends, Issues and Dynamics of Change	
<b>Research Methods</b>		
Select 12 units from the following Cognate courses:		12
EDUC 322	Qualitative Research Design and Methods	
EDUC 323	Advanced Qualitative Research	
EDUC 325	Quantitative Research Design and Methods	
EDUC 326	Applied Multiple Regression	
EDUC 327	Structural Equation Modeling	
EDUC 353	Models of Epistemology and Inquiry	
EDUC 374	Action Research	

#### Organizational Learning and Effectiveness

Select 12 units from the following:		12
EDUC 211	Facilitation of Projects and Initiatives	
EDUC 235	Design Thinking for Organizational Analysis	
EDUC 236	Prototyping for Organizational Improvement	
EDUC 237	Organizational Learning	
EDUC 238	Organizational Change and Consulting	

#### Social and Educational Entrepreneurship

EDUC 215	Creativity and Ideation	3
EDUC 287	Educational and Social Entrepreneurship	3
EDUC 366	Seminar: Marketing and Public Relations in Education	3
EDUC 377	Design Thinking & Lean Startup for Social Impact	3

**IV. Of the required 56 units a minimum of 18 units must be from the Benerd School of Education**

**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 School of Education  
 Linda Webster, PhD, Chair

### 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 Educational 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.

requires a minimum of 28 units, in order to obtain the credential, additional units may be required.

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 204	Pluralism in American Education
EDUC 216	Nature and Conditions of Learning
EDUC 304	Program Evaluation
EDUC 330	Advanced Human Development I
EDUC 331	Advanced Human Development II
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	Data-Based Decision Making I: Behavioral Assessment and Intervention
EDUC 345	Data-Based Decision Making II: 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 School of Education.

**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

# SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

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

Phone: (209) 946-2151

Location: John T. Chambers Technology Center

Steven Howell, Dean

## Programs Offered

**Master of Science in Cybersecurity**

**Master of Science in Data Science**

**Master of Science in Engineering 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.

## Graduate Program Admission Criteria

The graduate admission criteria varies for the three graduate programs in the School of Engineering and are specified for each program. All graduate applicants 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)

## General Academic Policies

### Engineering and Computer Science Prerequisite Requirement

All course prerequisites in the master programs 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 and Cybersecurity.

## Cybersecurity

### Degrees Offered

**Master of Science in Cybersecurity**

### Cybersecurity Program Overview

The Master of Science in Cybersecurity program provides students with in-depth knowledge in key areas of Computer Science and Computer Engineering such as cyber defense, cryptography, secure software development, vulnerability detection, wired and wireless networking, low-level programming, and the laws governing cyber operations. Students learn a variety of in-demand skills, including detecting and preventing network attacks; identifying and preventing vulnerabilities in software applications; reverse engineering malware to understand its design, operation, and communications protocols; the use of cryptography in cybersecurity; and network reconnaissance, intrusion, and data exfiltration from both a defensive and offensive standpoint. This 30-unit, 1-year program includes extensive hands-on labs, exercises, and projects.

## Admission Criteria

The following admissions requirements have been set for entry into the program:

- Bachelors degree
- Official university transcript(s) showing a 3.0/4.0 GPA on the last 60 units of undergraduate study
- Educational qualifications and/or work experience in:
  - Data Structures (equivalent to COMP 053)
  - Discrete Math (equivalent to COMP 047)
- Two letters of recommendation

- A personal statement discussing academic and/or industry credentials, knowledge of cybersecurity foundational topics, and enthusiasm for this course of study
- For students whose first language is not English, the Test of English as a Foreign Language (TOEFL) is required. The minimum score for admission is 550 (paper), 213 (computer), or 80 (internet). An IELTS score of 6.5 is acceptable in place of the TOEFL.

**The MS in Cybersecurity prepares graduates for careers in the field of computer and network security. The eleven program educational objectives are:**

1. **Low Level Programming Languages** – Students will be able to write computer programs that interact with a system without the layers of abstraction that are provided by many high level languages.
2. **Software Reverse Engineering** – Students will be able to deduce the design of a software component, determine how it works, and discover the data and communication protocols it uses, without knowing its design in advance.
3. **Operating System Theory** – Students will have a thorough understanding of operating systems theory and implementation.
4. **Networking** – Students will have a thorough understanding of how networks work at the infrastructure, network and applications layers; how they transfer data; how network protocols work to enable communication; and how the lower-level network layers support the upper ones to enable communications and data transfer.
5. **Cellular and Mobile Technologies** – Students will have a thorough understanding of how data is processed and transmitted using mobile devices.
6. **Discrete Math and Algorithms** – Students will be familiar with key theoretical concepts in the fields of discrete mathematics, algorithms analysis, and finite automata in order to make educated decisions when choosing between different algorithms and methods of solving design problems.
7. **Overview of Cyber Defense** – Students will have a sound understanding of the technologies and methods utilized to defend systems and networks.
8. **Security Fundamental Principles** – Students will possess a thorough understanding of the fundamental principles underlying cybersecurity, how these principles interrelate and are employed to build secure systems.
9. **Vulnerabilities** – Students will possess a thorough understanding of the various types of security vulnerabilities (design and/or implementation weaknesses), their underlying causes, their identifying characteristics, the ways in which they are exploited, and potential mitigation strategies.
10. **Cybersecurity Law** – Students will understand the many laws, regulations, directives and policies to ensure their actions are in compliance with state, federal, and international law.
11. **Communication Skills** – Students will be able to communicate effectively with both technical and non-technical audiences.

## Master of Science in Cybersecurity

Students must complete a minimum of 30 units with a Pacific cumulative grade point average of 3.0 to earn the master of science in cybersecurity degree.

### Technical Core

CYBR 200	Secure Software Systems	3
CYBR 210	Vulnerabilities	3
CYBR 220	Software Reverse Engineering	3

CYBR 230	Advanced Computer Networking	3
CYBR 240	Cyber Defense and Offense	3
CYBR 250	Cybersecurity Law and Policy	3
CYBR 280	Cybersecurity Capstone Project	3

### Technical Electives

Select three of the following: *		9
COMP 157	Design and Analysis of Algorithms	
COMP 173	Operating Systems	
COMP 251	Machine Learning	
COMP 261	Data Science	
ECPE 170	Computer Systems and Networks	
ECPE 177	Computer Networking	
ECPE 226	Computational Intelligence	
ECPE 259	Sensor Networks for Engineering Systems	
ECPE 276	Cloud Computing	
EMGT 262	Applied Analytics for Decision Making	
ENGR 201	Techniques in Research	
ENGR 212	Technology Venturing	
ENGR 219	Numerical Methods for Engineering	
ENGR 250	Probability and Statistics for Engineering and Computer Science	
ENGR 290	Engineering Project Management and Leadership	
ENGR 292	Managing Science Technology and Innovation	
COMP 291	Graduate Independent Study or ECPE 291 Graduate Independent Study	
COMP 297	Graduate Research or ECPE 297 Graduate Research	
MATH 148	Cryptography or MATH 174 Graph Theory	

\* Maximum of 6 units of undergraduate courses (100-level or above) as approved by advisor. Eligible courses are COMP 157, COMP 173, ECPE 170, ECPE 177, MATH 148 or MATH 174. The course grade must be a 'C' or better.

## Cybersecurity Courses

### CYBR 200. 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: COMP 053 or completion of "Data Structures"; COMP 157 or completion of "Algorithms"; COMP 047, MATH 049, MATH 074, MATH 110, MATH 148, MATH 174 or completion of "Discrete Math"; ECPE 170 or completion of "Low-level Programming" all with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science.

### CYBR 210. 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, COMP 173 or completion of "Operating Systems"; COMP 177, ECPE 177 or completion of "Computer Networking" all with a "C" or better.

### **CYBR 220. 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 ECPE 170 with a "C" or better or completion of "Low-level Programming".

### **CYBR 230. 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, COMP 053 or completion of "Data Structures"; COMP 177, ECPE 177 or completion of "Computer Networking" all with a "C" or better.

### **CYBR 240. 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, ECPE 170 or completion of "Low-level Programming"; COMP 177, ECPE 177 or completion of "Computer Networking" all with a "C" or better.

### **CYBR 250. Cybersecurity Law and Policy. 3 Units.**

A complex framework of laws, regulations, directives, and policies governs the field of cybersecurity today. In this course, students will study key legal and policy issues that apply to the government or private sector when defending computer systems and networks from attack. Further, students will study the legal authorities that govern offensive actions in cyberspace by governmental agencies. Federal laws, executive orders, regulations, and international laws will be examined in the context of defensive or offensive cyber operations, surveillance, privacy, and civil liberties. Students will gain an understanding of the extent and limitations of their authorities to ensure their operations in cyberspace are in compliance with applicable laws. Prerequisite: Graduate or blended students in the School of Engineering and Computer Science.

### **CYBR 280. Cybersecurity Capstone Project. 3 Units.**

In this capstone design course, students synthesize their cumulative cybersecurity knowledge through the development of computer application or system. Students will establish design objectives and criteria, analyze solution alternatives, and evaluate design performance and capabilities. Students will then implement, test and evaluate the resulting prototype system. Complete documentation is required, including oral presentations, written reports, and demonstration of the final working system. Prerequisites: Graduate or blended students in the School of Engineering and Computer Science; CYBR 200; CYBR 210; CYBR 220; CYBR 230; CYBR 240; CYBR 250 all with a "C" or better.

## **Data Science**

Phone: (209) 946-2992

Location: San Francisco and Sacramento

Website: Data Science (<http://www.pacific.edu/analytics>)

## **Degrees Offered**

**Master of Science in Data Science**

## **Data Science Program Overview**

The MS in Data Science prepares graduates for careers in data analytics and related fields. This is a science (as opposed to business) based program that is focused on developing students' math foundation in statistics and linear algebra, and computer programming to prepare them for coursework in topics like machine learning, fraud detection, sentiment analysis, and data visualization.

This 32-unit, 4-semester degree culminates in the Capstone Project, in which students work on an analytics problem with a sponsoring company.

Prerequisite entry requirements include:

- A Bachelors degree
- Educational qualifications and/or work experience in:
  - Statistics
  - Linear Algebra
  - Computer programming (any language, although Python and R are the preferred languages)
  - Basic calculus (derivatives)
- In addition, international students must also have:
  - The US equivalent of a GPA of 2.65 or above
  - TOEFL (or equivalent) English language proficiency. A minimum score of 90 or a score of at least 550 (213 on the computer-based test) is required.

## **Data Science Program Educational Objectives**

The MS in Data Science prepares graduates for careers in data analytics and related fields. This is done by developing students' math foundation in statistics and linear algebra, and learning skills in the areas of data preparation, data modeling, predictive modeling, and a variety of data science / analytic solution areas such as customer analytics, fraud detection and healthcare analytics.

The education that students receive will allow them after graduation to:

- Extract value from data to assist organizations in understanding past performance, predicting future events, and optimizing processes;
- Apply the methods of data wrangling, analytic programming, data mining, quantitative methods, modeling, to prepare very large data sets for analysis;
- Design and develop practical data oriented solutions using modern analytic techniques such as machine learning, time series analysis, and clustering;
- Apply the scientific method to develop and test hypotheses using mathematical and statistical principles;
- Conduct compelling communications through informative visualizations and effective presentation skills.

## 1. Data Analysis

Analyze various forms of data (e.g. numerical, categorical, textual, objects, etc.) using appropriate mathematical and/or machine learning techniques.

## 2. Data Engineering

Apply modern programming and data engineering skills, extract data from files, databases, or online resources, and transform it for appropriate analysis.

## 3. Professional Presentation

Effectively communicate results in a format that is appropriate to the audience, via written, oral, and graphical media.

# Master of Science in Data Science

Students must complete a minimum of 32 units with a Pacific cumulative grade point average of 3.0 to earn the master of science in data science degree.

### Semester 1

ANLT 201	Linear Algebra for Data Science	2
ANLT 202	Frequentist Statistics	1
ANLT 208	Research Methods for Data Science	1
ANLT 212	Analytics Computing for Data Science	2
ANLT 242	Relational Databases	1
ANLT 283	Weekly Hot Topics	1

### Semester 2

ANLT 203	Bayesian Statistics	1
ANLT 210	Software Methods for Data Science	1
ANLT 222	Machine Learning for Data Science	2
ANLT 224	Data Wrangling	1
ANLT 232	Introduction to Data Visualization	1
ANLT 272	Healthcare Case Studies	1
ANLT 283	Weekly Hot Topics	1

### Semester 3

ANLT 214	Data Engineering for Data Science	2
ANLT 234	Analytics Storytelling for Data Science	1
ANLT 243	NoSQL Databases	1
ANLT 276	Emphasis Case Studies	1
ANLT 283	Weekly Hot Topics	1

Select three of the following: 3

ANLT 205	Consumer Analytics	
ANLT 206	Sentiment Analysis and Opinion Mining	
ANLT 207	Time Series Analysis	
ANLT 273	Fraud Detection	
ANLT 274	Customer Analytics	
ANLT 275	Text Mining	

### Semester 4

ANLT 233	Dynamic Visualization	1
ANLT 282	Capstone Project	6

## Analytics Courses

### ANLT 201. Linear Algebra for Data Science. 2 Units.

Linear algebra is the generalized study of solutions to systems of linear equations. In this course, students will begin by focusing on developing a conceptual understanding of computational tools from linear algebra, which are frequently employed in the analysis of data. These tools include: formulating linear systems as matrix-vector equations, solving systems of simultaneous equations using technology, performing basic computations involving matrix algebra, solving eigenvalue-eigenvector problems using technology, diagonalization, and orthogonal projections. Students will then be exposed to more advanced topics, such as singular value decomposition, principle component analysis, Random Walk, Markov Chains, and applications of linear algebra in data mining. The use of software to perform computations will be emphasized. Prerequisite: Admission into the Data Science program or permission of Program Director.

### ANLT 202. Frequentist Statistics. 1 Unit.

A survey of regression, linear models, and experimental design. Topics include simple and multiple linear regression, single- and multi-factor studies, analysis of variance, analysis of covariance, model selection, and diagnostics. This class will focus more on the application of regression methods than the underlying theory through the use of modern statistical programming languages. Prerequisite: ANLT 201 with a "C" or better.

### ANLT 203. Bayesian Statistics. 1 Unit.

This course introduces Bayesian statistical methods that enable data analysts and scientists to combine information from similar experiments, account for complex spatial, temporal, and other relationships, and also incorporate prior information or expert knowledge into a statistical analysis. This course explains the theory behind Bayesian methods and their practical applications, such as social network analysis, predicting crime risk, or predicting credit fraud. The course emphasizes data analysis through the use of modern analytic programming languages. Prerequisite: ANLT 202 with a "C" or better.

### ANLT 205. Consumer Analytics. 1 Unit.

This course introduces the techniques used to analyze consumer shopping and buying behavior using transactional data in industries like retail, grocery, e-commerce, and others. Students will learn how to conduct item affinity (market basket) analysis, trip classification analysis, RFM (recency, frequency, monetary) analysis, churn analysis, and others. This class will teach students how to prepare data for these types of analyses, as well as how to use machine learning and statistical methods to build the models. The class is an experiential learning opportunity that utilizes real-world data sets and scenarios. Prerequisite: ANLT 222 with a "C" or better.

### ANLT 206. Sentiment Analysis and Opinion Mining. 1 Unit.

This course introduces the algorithms and methods used to analyze the subjective opinions and sentiments of the author of a free text document such as a tweet, blog post, or article. The class will examine the applications of this type of analysis as well as its benefits and limitations. Sentiment analysis is closely tied to text mining and uses techniques such as natural language processing, text analysis, and computational linguistics for feature extraction and preprocessing of the data. Students will explore the current state of usage of sentiment analysis, as well as future implications and opportunities. Prerequisite: ANLT 222 with a "C" or better.

**ANLT 207. Time Series Analysis. 1 Unit.**

This course introduces the theory and application of statistical methods for the analysis of data that have been observed over time. Students will learn techniques for working with time series data and how to account for the correlation that may exist between measurements that are separated by time. The class will concentrate on both univariate and multivariate time series analysis, with a balance between theory and applications. Students will complete a time series analysis project using real-world scenario and data set. Prerequisite: ANLT 222 with a "C" or better.

**ANLT 208. Research Methods for Data Science. 1 Unit.**

Students learn about research design, qualitative and quantitative research, and sources of data. Topics will include a variety of research topics, including such things as data collection procedures, measurement strategies questionnaire design and content analysis, interviewing techniques, literature surveys; information databases, probability testing, and inferential statistics. Students will prepare and present a research proposal (with emphasis on technical writing/presentation principles) as part of the course.

**ANLT 210. Software Methods for Data Science. 1 Unit.**

Students learn the tools, methodology, and etiquette in developing data science applications, tools, and analytical workflows in collaborative environments. Data scientists are at the nexus of software engineering, science, and business. In order to thrive in this world, they must work collaboratively across these fields and skill sets, while ensuring that work is accessible and digestible to everyone involved. Moreover, they must ensure their work is production-worthy and extensible. This course teaches all of the elements, both technical and conceptual, to create productive, helpful, and professional data scientists.

**ANLT 212. Analytics Computing for Data Science. 2 Units.**

This course introduces computational data analysis using multi-paradigm programming languages. By the end of the course, students will tackle complex data analysis problems. The course emphasizes the use of programming languages for statistical and machine learning analysis, and predictive modeling. Graphical analytics tools will also be used. The course will also cover the various packages for accessing data that come with the various languages, manipulating and preparing data for analysis, conducting statistical and machine learning analyses, and graphically plotting and visualizing data and analytical results. The course emphasizes hands-on data and analysis using a variety of real-world data sets and analytical objectives. Prerequisite: Admission into the Data Science program or permission of Program Director.

**ANLT 214. Data Engineering for Data Science. 2 Units.**

This course introduces students to data warehousing architectures, big data processing pipelines and in-memory analytic techniques as an alternative to traditional warehouse approaches. The class will provide an overview of conventional data warehousing architectures, focusing on those processing pipeline technologies that enable the management of both SQL and NoSQL data. Students will learn how to design systems to manage large volumes of poly-structured data including temporal, spatial, spatiotemporal, and multidimensional data. The class will also provide an overview of the benefits of in-memory analytics, focusing on cloud computing and cluster computing architectures and associated modern toolsets. Students will learn how to design in-memory systems to iterative graphs, complex multistage applications, fault tolerant solutions, and to use modern cloud based analytic platform services. Prerequisite: Successful Completion of Second Semester of Master of Science in Data Science with a "C" or better.

**ANLT 222. Machine Learning for Data Science. 2 Units.**

Machine learning is the artificial intelligence discipline for uncovering patterns and relationships contained in large data sets. Students will be exposed to the supervised learning methods such as neural networks and decision trees. Practical application of these techniques will be tools like R and Python. Students will also learn: proper techniques for developing, training, and cross-validating predictive models; bias versus variance; and will explore the practical usage of these techniques in business and scientific environments. Students will also be introduced to unsupervised learning – the class of machine learning for uncovering patterns and relationships in data without labeling the data or establishing a preconceived set of classes or results. Students will learn through hands-on programming projects. Prerequisite: Successful Completion of First Semester of Master of Science in Data Science with a "C" or better.

**ANLT 224. Data Wrangling. 1 Unit.**

This course will teach you how to retrieve data from disparate sources, combine it into a unified format, and prepare it for effective analysis. This aspect of data science is often estimated to be upwards of 80% of the effort in a typical analytics process. Students will learn how to read data from a variety of common storage formats, evaluate its quality, and learn various techniques for data cleansing. Students will also learn how to select appropriate features for analysis, transform them into more usable formats, and engineer new features into more powerful predictors. This class will also teach students how to split the data set into training and validation data for more effective analytical modeling.

**ANLT 232. Introduction to Data Visualization. 1 Unit.**

This course introduces tools and methods for visualizing data and communicating information clearly through graphical means. The class covers various data visualizations and how to select the most effective one depending on the nature of the data. Students will practice using the data visualization methodology by walking through a case study with the instructor and then practicing the steps on their own. Students will work with modern analytic graphics packages, and will be introduced to open source libraries, and to commercial visualization products. Prerequisite: ANLT 213 with a "C" or better.

**ANLT 233. Dynamic Visualization. 1 Unit.**

This course introduces advanced visualization techniques for developing dynamic, interactive, and animated data visualization. Students will learn a variety of techniques for the visualization of complicated data sets. These techniques are valuable for visualizing genomic data, social or other complex networks, healthcare data, business dynamics changing over time, weather and scientific data, and others. Often the visual presentation of data is enhanced when it is made interactive and dynamic, allowing users to "move through" the data and manipulate the data graphically for exploratory analysis. This presentation often involves web application development, and students will be exposed to these rudiments as well as tools that enable faster development of data visualization. Prerequisite: ANLT 234 with a "C" or better.

**ANLT 234. Analytics Storytelling for Data Science. 1 Unit.**

This course builds upon ANLT 232. It will dive into how visualizations should be presented differently when presenting to lay people, business executives, and a technical group. It will also consider visualizations meant for exploratory analysis versus persuasive argument versus survey, or "30,000 foot" analysis. Working alone and in teams, students will create visualizations using their own findings and using provided case studies. Prerequisite: ANLT 232 with a "C" or better.

**ANLT 242. Relational Databases. 1 Unit.**

This course introduces relational database management systems (RDBMS) and the structured query language (SQL) for manipulating data stored therein. The class is focused on the applied use of SQL by data scientists to extract, manipulate and prepare data for analysis. Although this class is not a database design class, students will be exposed to entity-relationship (ER) models and the benefits of third normal form (3NF) data modeling. The class employs hands-on experiential learning utilizing the modern relational database querying languages and graphical development environments.

**ANLT 243. NoSQL Databases. 1 Unit.**

This course will examine different non-relational (NoSQL) database paradigms, such as Key-Value, Document, Column-family, and Graph databases. Students will learn about advantages and disadvantages of the different approaches. The class will include hands-on experience with a representative sample of NoSQL databases. Computing developments that spurred the existence of NoSQL databases, such as big data, distributed and cloud computing will also be discussed. Prerequisite: ANLT 242 with a "C" or better.

**ANLT 272. Healthcare Case Studies. 1 Unit.**

This course is a culmination of the first semester of the MS Analytics program. It provides an experiential learning opportunity that ties together the statistical, computational analytics and database concepts in a series of case studies in the Healthcare sector. Students will examine four separate case studies of the use of data analytics in healthcare. Students will work in teams to dissect these case studies and evaluate the business opportunity, the analysis methodology, the raw data, the feature engineering and data preparation, and the analytical outcomes. Students will present their evaluation and make recommendations for improvements in the analysis and related opportunities. Prerequisites: ANLT 203, ANLT 212, ANLT 243 with a "C" or better.

**ANLT 273. Fraud Detection. 1 Unit.**

This course introduces the use of analytics to detect fraud in a variety of contexts. This class shows how to use machine learning techniques to detect fraudulent patterns in historical data, and how to predict future occurrences of fraud. Students will learn how to use supervised learning, unsupervised learning, and social network learning for these types of analyses. Students will be introduced to these techniques in the domains of credit card fraud, healthcare fraud, insurance fraud, employee fraud, telecommunications fraud, web click fraud, and others. The course is experiential and will apply concepts taught in prior data wrangling and machine learning courses using real-world data sets and fraud scenarios. Prerequisite: ANLT 222 with a "C" or better.

**ANLT 274. Customer Analytics. 1 Unit.**

This course introduces the techniques used to analyze consumer shopping and buying behavior using transactional data in industries like retail, grocery, e-commerce, and others. Students will learn how to conduct item affinity (market basket) analysis, trip classification analysis, recommender systems, RFM (recency, frequency, monetary) analysis, churn analysis, and others. This class will teach students how to prepare data for these types of analyses, as well as how to use machine learning and statistical methods to build the models. The class is an experiential learning opportunity that utilizes real-world data sets and scenarios. Prerequisite: ANLT 222 with a "C" or better.

**ANLT 275. Text Mining. 1 Unit.**

This course introduces the essential elements of text mining, or the extension of standard predictive methods to unstructured text. The class will explore the use of text mining in domains such as digital security, bioinformatics, law, marketing, and social media. Students will be exposed to information retrieval, lexical analysis, pattern recognition, meta-data tagging, and natural language processing (NLP). A large portion of this class will be devoted to the data preparation and wrangling methods needed to transform unstructured text into a suitable structure for analysis. Prerequisite: ANLT 222 with a "C" or better.

**ANLT 276. Emphasis Case Studies. 1 Unit.**

This course is a culmination of the second semester in the Master of Science in Analytics program. It provides an experiential learning opportunity that ties together the statistical, computational analytics and database concepts in a series of case studies in the finance, manufacturing, telecommunications and retail sectors. Students will examine four separate case studies of the use of data analytics. Students will work in teams to dissect these case studies and evaluate the business opportunity, the analysis methodology, the raw data, the data and feature engineering and data preparation, and the analytical outcomes. Students will present their evaluation and make recommendations for improvements in the analysis and related opportunities. Prerequisite: Successful Completion of First Semester of Master of Science in Analytics with a "C" or better.

**ANLT 282. Capstone Project. 6 Units.**

This course is a culmination of all modules in the MS Data Science program. It provides an experiential learning opportunity that connects all of the materials covered in the MS Analytics program. Students will be formed into teams and assigned to an industry sponsored project. Capstone projects will be agreed in advance with sponsoring companies and will represent real-world business issues that are amenable to an analytic approach. These projects will be conducted in close oversight by the sponsoring company, as well as, a University faculty member and may be conducted on the sponsoring company's premises using their preferred systems and tools, at the sponsoring company's discretion. Prerequisite: Successful completion of Semester 2 with a "C" or better.

**ANLT 283. Weekly Hot Topics. 1 Unit.**

This course consists of a set of weekly presentations and discussions around key analytic issues and current case studies. These hot topics will be presented by a combination of guest speakers – industry luminaries in the area of analytics – and University of the Pacific faculty members, including the MS Analytics program director. Many of these topics will be drawn from relevant real-world contemporary analytic stories that reinforce specific elements of the academic content being taught and cannot be predicted in advance.

## 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 references
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
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		
<b>Concentration Requirements</b>		
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		
<b>Concentration Requirements</b>		
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		
<b>Concentration Requirements</b>		
ENGR 292	Managing Science Technology and Innovation	3
Three electives approved by advisor as coherent plan		9
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; MATH 053; CHEM 025 or CHEM 027; BIOL 061 or BENG 063 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. 4 Units.**

This course is a lecture and lab-based study of the major organ systems in 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. Lectures also compare each system to abiotic models, and utilize basic principles of physics, math, and chemistry. Lab exercises demonstrate basic physiological processes and emphasize techniques of instrument-based data acquisition and data presentation. Students also create virtual instruments (VIs) that use the program LabVIEW and apply the VIs in a final independent lab project. Prerequisites: Completion of all Fundamental Skills; BIOL 051 or BENG 053; BIOL 061 or BENG 063; CHEM 025 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, imaging 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; BIOL 061 or BENG 063; ECPE 041/ECPE 041L; MATH 055 all with a "C-" or better or permission of instructor.

**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. Prerequisite: Completion of all Fundamental Skills, Junior or Senior standing, BENG 124 and 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.**

Introduction to the theory and applications of structural analysis and design. Topic include: determination of loads, analysis of beams, trusses and frames, influence line and indeterminate structures. Prerequisites: Completion of all Fundamental Skills, CIVL 015, ENGR 019, 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. Heavy Construction Methods. 4 Units.**

An introduction to the areas of construction engineering and construction management. Construction engineering topics include construction processes and construction econometrics. Construction management topics include contracting, estimating, planning, bidding, and scheduling. Prerequisite: 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, odd years).

**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, odd years).

**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, even years).

**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. (Spring, every year).

**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. (Fall, every year).

**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, every year).

**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. (Fall, every year).

**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, even years).

**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. (Fall, every year).

**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 241. Programming Language Semantics. 3 Units.**

This course examines a variety of modern programming languages from a theoretical perspective. The focus is on languages designed to support particular novel or interesting concepts. Formal techniques for the specification of the semantics of languages are used to compare and contrast languages. Prerequisites: COMP 141 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science.

**COMP 251. Machine Learning. 3 Units.**

An introduction to statistical machine learning that covers practical applications of machine learning as well as theoretical concepts like PAC learning and Occam's Razor. Topics include: decision tree learning, artificial neural networks, Bayesian learning, reinforcement learning, genetic algorithms, Markov decision processes and clustering. Prerequisites: COMP 053 with a "C" or better, Graduate or blended 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, MATH 037 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 simulation, teaching and training. Students gain practical experience designing a virtual world. Prerequisites: COMP 153 or ECPE 153 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science.

**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 includes analysis of published research, programming assignments and an original research project/investigation. Prerequisite: Graduate or blended 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: Graduate or blended students in the School of Engineering and Computer Science or permission of the instructor.

**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.

**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. 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, completion of CHEM 024 or CHEM 025 or CHEM 027 or BIOL 051 or BIOL 061 or BENG 053 or BENG 063 with a "C-" or better. Prerequisite that may be taken concurrently: ECPE 071, ECPE 071L Corequisite: ECPE 131L.

**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: MATH 057, PHYS 055 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, ECPE 041 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 and ECPE 121 with a "C-" or better.

**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; 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 design of 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 analyze, 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.**

This course takes a mathematical approach to address the learning theory. Students will also learn the applications of computational intelligence by applying the techniques learned in the course to real world data sets. Topics include types of learning, theory of generalization, PAC model, growth function, break points, VC dimension, generalization trade-off, linear and logistic regression, non-linear transformation, fundamentals of neural networks, foundations of fuzzy approaches, support vector machines, and swarms. Familiarity with basics in linear algebra, probability, and analysis of algorithms recommended. Prerequisite: 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: ECPE 170 with a "C" or better and Graduate or blended students in the School of Engineering and Computer Science.

**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 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 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 039 and 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 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. 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.

**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. 3 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.

**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. 4 Units.**

Students study concepts of stress, strain and deformation, and the analysis and design of simple elements of structures and machines. The course introduces the failure theory and energy methods. 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. 3 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; CHEM 024 or CHEM 025 or CHEM 027; 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 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. 4 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.

**MECH 104. Introduction to Mechatronics. 3 Units.**

Students examine a broad understanding of the main components of mechatronic systems and understanding of the general principles involved in computer-controlled machinery. Topics include 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: Completion of all Fundamental Skills; ECPE 041, ENGR 120, ENGR 110 with a "C-" or better.

**MECH 120. Machine Design and Analysis I. 3 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. Prerequisites: Completion of all Fundamental Skills; ENGR 045, ENGR 120, ENGR 121; MECH 015 with a "C-" or better. (Fall).

**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. 3 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. 3 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: Completion of all Fundamental Skills; MATH 057, ENGR 019, ENGR 120 with a "C-" or better.

**MECH 140. Engineering Design/Senior Project I. 3 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. Prerequisites: Completion of all Fundamental Skills; ENGR 121 and ENGR 122 with a "C-" or better. Prerequisite, may be taken concurrently: ENGR 110; MECH 120 or MECH 150 with a "C-" or better.

**MECH 141. Engineering Design/Senior Project II. 3 Units.**

The student completes the design phase of their project. Parametric design techniques such as guided iteration, optimization, and Taguchi's methods are used to complete the detailed design of a product or process that involves mechanical engineering. Manufacturing necessary to complete the product or process is a requirement. Weekly oral and written progress reports are required along with final comprehensive oral and written reports. Prerequisites: Completion of all Fundamental Skills; MECH 100 and MECH 140 with a "C-" or better.

**MECH 150. Heat Transfer. 3 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: Completion of all Fundamental Skills; ENGR 122 and 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. 3 Units.**

Students examine the thermodynamics of cycles for power and refrigeration. Other topics include the thermodynamics of gas mixture, chemical reactions, 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. Prerequisites: Completion of all Fundamental Skills and ENGR 122 with a "C-" or better.

**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, ENGR 110, 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.

# THE THOMAS J. LONG SCHOOL OF PHARMACY AND HEALTH SCIENCES

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

Phone: (209) 946-2561

Phillip R. Oppenheimer, Dean

Xiaoling Li, Associate Dean, Graduate Education & Research

Eric G. Boyce, Associate Dean, Academic Affairs

Nancy L. DeGuire, Associate Dean, External Relations

Linda L. Norton, Associate Dean, Operations

Allen Shek, Associate Dean, Professional Programs

Marcus Ravnán, Assistant Dean, Pre-Pharmacy and Pre-Health Affairs

## Programs Offered

**Master of Science in Athletic Training**

**Master of Science in Speech-Language Pathology**

**Master of Science in Pharmaceutical and Chemical Sciences**

**Doctor of Audiology (San Francisco)**

**Doctor of Philosophy in Pharmaceutical and Chemical Sciences**

**Doctor of Physical Therapy**

**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/Master of Business Administration**

The mission of the Thomas J. Long School of Pharmacy and Health Sciences 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 and Health Sciences include the Doctor of Philosophy and Master of Science degrees in the Pharmaceutical and Chemical Sciences, the Doctor of Physical Therapy degree, the Master of Science degree in Speech-Language Pathology and the combined degrees, 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: [go.pacific.edu/pharmchem](http://go.pacific.edu/pharmchem) (<http://go.pacific.edu/pharmchem>)

### 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 and Physical Chemistry, Molecular-Cellular Pharmacology and Toxicology, Chemical Synthesis, Drug Discovery and Design, Biopharmaceutical Sciences, and Pharmacoeconomics 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 and quantitative sections are 303.

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](http://www.wes.org), or Educational Credential Evaluators (ECE), [www.ece.org](http://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) (<http://www.pacific.edu>) and go to the Office of Research and Graduate Studies 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.

## Athletic Training

Thomas Koesterer, Program Director

### Program Offered

**Master of Science in Athletic Training**

## Program Overview

University of the Pacific's Professional (Entry-level) 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 10-week summer session. Students learn through extensive hand-on experiences with athletes/patients, and excellent classroom and laboratory instruction from experienced, caring faculty. The program prepares student 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 is seeking accreditation for our new Masters of Science in Athletic Training (MSAT) program, but is not currently accredited by the Commission on Accreditation of Athletic Training Education (CAATE). The institution will submit a Self-Study to begin the accreditation process by July 1, 2019, with an expected accreditation Site-Visit date in spring 2020. Once the MSAT program achieves "Active - in good standing" accreditation with CAATE, students that graduate after the Site-Visit will be eligible to sit for the Board of Certification (BOC) examination to become a Certified Athletic Trainer.

## Admission Requirements

- ATCAS Application
- Bachelor's degree from a regionally accredited college or university
- Cumulative GPA of 3.0 or greater
- Prerequisite course GPA of 3.0 or greater with no grade below a "C"
- 100 hours of observation supervised by a currently certified athletic trainer(s)
- Current certification in Emergency Cardiac Care (CPR/AED) as indicated by the Board of Certification
- Current First Aid certification
- Three (3) letters of recommendation describing your academic and clinical abilities related to Athletic Training
  - One letter from the athletic trainer, who supervised the majority of observation hours
  - One letter from a college or university instructor
  - One additional professional reference
- Official transcripts
- Resume
- Personal interview, if invited
- GRE scores

## 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
- General Psychology
- Nutrition

## Preferred Prerequisite Courses

The following courses will strengthen a candidate's application, but are not required for admission.

- Athletic Training
- Health
- Wellness
- Statistics
- Research methods
- Medical terminology

## 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

Students must complete 60 semester units with a Pacific cumulative grade point average of 3.0 to earn the master of science in athletic

training degree. Students must maintain a cumulative GPA of at least a 3.0. Any grade below a 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 292A	Pre-Season Clinical Internship	2
Fall		
ATTR 214	General Medical Conditions in Athletic Training	3
ATTR 252	Healthcare Administration in Athletic Training	3
ATTR 261	Pharmacology in Athletic Training	2
ATTR 262	Nutrition in Athletic Training	2
ATTR 292B	Clinical Internship	4
Spring		
ATTR 215	Psychosocial Intervention and Referral in Athletic Training	3
ATTR 242	Strength and Conditioning in Athletic Training	1
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 instructor.

### 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 instructor.

**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.

**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.

**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 instructor.

**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.

**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.

**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.

**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.

**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 instructor.

**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.

**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.

**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 instructor.

**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.

**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 instructor.

**ATTR 242. Strength and Conditioning in Athletic Training. 1 Unit.**

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.

**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.

**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.

**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.

**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.

**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.

**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 the student's knowledge and skill, as well as the context of care. Prerequisite: ATTR 287A with a "B-" or better.

### 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.

### ATTR 292A. Pre-Season Clinical Internship. 2 Units.

Full-time, practice-intensive pre-season clinical internship allows the student to experience the totality of care provided by athletic trainers. Prerequisite: ATTR 287B with a "B-" or better.

### 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.

## 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>  
Rupa Balachandran, Ph.D., Audiology Department Chair

## 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.

### 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

Students must complete a minimum of 124 units with a Pacific cumulative grade point average of 3.0 in order to earn the doctor of audiology degree.

AUDI 301	Anatomy and Physiology of Hearing	3
AUDI 303	Signals and Systems	3
AUDI 305	Diagnostic Audiology I	3
AUDI 307	Diagnostic Audiology II	3
AUDI 309	Diagnostic Electrophysiology I	3
AUDI 311	Pediatric Audiology	3
AUDI 313	Central Auditory Processing - Diagnosis & Management	3
AUDI 315	Amplification I	3
AUDI 317	Amplification II	3
AUDI 319	Amplification III	3
AUDI 321	Auditory Implants	3
AUDI 325	Aural Rehabilitation	3
AUDI 331	Vestibular Assessment I	3
AUDI 337	Speech-Language Pathology for Audiologists	3
AUDI 339	Deaf Culture and Communication Systems	3
AUDI 341	Psychoacoustics	3
AUDI 343	Research Methods	3
AUDI 345	Hearing Disorders	3
AUDI 347	Tinnitus Assessment and Treatment	3
AUDI 349	Industrial Audiology	3
AUDI 353	Professional Issues	3
AUDI 355	Practice Management	3
AUDI 357	Pharmacology	3
AUDI 359	Tinnitus Management	3
AUDI 361	Comprehensive Differential Diagnosis	3
AUDI 363	Diagnostic Electrophysiology II	3
AUDI 365	Advanced Topics in Research, Practice and Technology	3
AUDI 367	Vestibular Assessment II	3
AUDI 369	Physical and Behavioral Health for Audiology	3
AUDI 385A	Audiology Practicum I	1
AUDI 385B	Audiology Practicum II	1
AUDI 385C	Audiology Practicum III	1
AUDI 387A	Internship I	2
AUDI 387B	Internship II	2
AUDI 388A	Externship I	9
AUDI 388B	Externship II	9
AUDI 388C	Externship III	9
AUDI 389A	Externship Seminar I	1
AUDI 389B	Externship Seminar II	1
AUDI 389C	Externship Seminar III	1
Total Hours		124

## **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.

### **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.

### **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.

### **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.

### **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).

### **AUDI 311. Pediatric Audiology. 3 Units.**

Diagnostic assessment of children from ages 0-18. Embryology and hearing development and genetics of hearing loss.

### **AUDI 313. Central Auditory Processing - Diagnosis & Management. 3 Units.**

Assessment (screening and diagnostic) and treatment options for auditory processing disorders.

### **AUDI 315. Amplification I. 3 Units.**

Theoretical and applied understanding of current technology in hearing aids. Electroacoustic analysis and programming of hearing instruments and verification of the performance of hearing instruments using objective and subjective measurements.

### **AUDI 317. Amplification II. 3 Units.**

Theoretical and clinical aspects of advanced signal processing schemes and verification procedures are taught. Selection and fitting of amplification for special populations.

### **AUDI 319. Amplification III. 3 Units.**

Advanced application of knowledge and skills obtained in AUDI 315 and AUDI 317. Personal and sound field FM systems, classroom listening, and assessment beyond the sound booth, classroom acoustics, assistive listening devices and counseling techniques.

### **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.

### **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.

### **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.

### **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 337. Speech-Language Pathology for Audiologists. 3 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.

### **AUDI 338A. Externship I. 3 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.

### **AUDI 339. Deaf Culture and Communication Systems. 3 Units.**

Introduction to Deaf Culture and American Sign Language (ASL), with emphasis on signs most useful to audiologists working clinically.

### **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.

### **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.

### **AUDI 347. Tinnitus Assessment and Treatment. 3 Units.**

Causes and pathophysiology of tinnitus. The various therapies, pharmacological agents, and management of tinnitus.

### **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.

### **AUDI 353. Professional Issues. 3 Units.**

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.

### **AUDI 355. Practice Management. 3 Units.**

Operational and business management of a clinical practice setting. Developing an appropriate business plan; startup and long term planning; essential legal considerations.

**AUDI 357. Pharmacology. 3 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.

**AUDI 359. Tinnitus Management. 3 Units.**

Management of the tinnitus patient with various therapies including pharmaceuticals, cognitive behavior therapy, and hearing devices.

**AUDI 361. Comprehensive Differential Diagnosis. 3 Units.**

Comprehensive review of use of auditory and vestibular test batteries in different diagnosis and management of patients.

**AUDI 363. Diagnostic Electrophysiology II. 3 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. Prerequisite: AUDI 309.

**AUDI 365. Advanced Topics in Research, Practice and Technology. 3 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.

**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. Prerequisite: AUDI 331.

**AUDI 369. Physical and Behavioral Health for Audiology. 3 Units.**

Referral and management of common health conditions including physical and behavioral health. Implications for hearing loss and clinical management.

**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.

**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.

**AUDI 387A. Internship I. 2 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.

**AUDI 387B. Internship II. 2 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.

**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.

**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.

**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.

**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.

**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.

**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.

**AUDI 397. Graduate Research. 1-6 Units.**

## 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:

<http://www.pacific.edu/Documents/school-graduate/acrobat/PharmChem.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:		3-4
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
Select two of the following (with approval of advisor):		8
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	
Select 6-8 units of the following Preferred Elective Courses: *		6-8
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
Select 4-8 units from the following Preferred Elective Courses: *		4-8
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
Select 3 units from the following Preferred Elective Courses: *		3
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:		6-7
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	
Select 4-8 units from the following Preferred Elective Courses: *		4-8
BIOL 222	Immunology	
PCSP 205	Instrumental Analytical Chemistry	
PCSP 207	Bioanalytical Techniques	
PCSP 211	Drug Design	
PCSP 216	Special Topics 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 235	Current Topics in Pharmacology and Toxicology	
PCSP 236	Selected Topics: Advanced Toxicology	
PCSP 237	Cell Culture Techniques	
PCSP 246	Selected Topics in Advanced Biochemistry	
PCSP 248	Enzymology	
<b>Non-thesis Required Courses:</b>		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 Pharmacology I	4
PCSP 232	Molecular Pharmacology II	4
PCSP 235	Current Topics in Pharmacology and Toxicology	2
Select 6-8 units from the Preferred Elective Courses: *		6-8
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.

## 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:		3-4
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

Students 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 at the end of the second 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
Select two of the following (with approval of advisor):		8
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	
Select 12-14 units of the following Preferred Elective Courses: *		6-8
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
Select 10-12 units from the following Preferred Elective Courses: *		4-8
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
Select 3 units from the following Preferred Elective Courses: *		3
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: 6-7

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	
Select 4-8 units from the following Preferred Elective Courses: *		4-8
BIOL 222	Immunology	
PCSP 205	Instrumental Analytical Chemistry	
PCSP 207	Bioanalytical Techniques	
PCSP 211	Drug Design	
PCSP 216	Special Topics 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 235	Current Topics in Pharmacology and Toxicology	
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 Pharmacology I	4
PCSP 232	Molecular Pharmacology II	4
PCSP 235	Current Topics in Pharmacology and Toxicology	2
Select 12-14 units from the Preferred Elective Courses: *		6-8
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 is designed to present an opportunity for pharmacy students who are fluent or proficient in the Spanish language to act as teaching assistants and assist other pharmacy students to learn Spanish for the Pharmacy Professional. Teaching assistants will meet with the instructor prior to each class session for class preparation and will then participate during class sessions. 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. Special Topics in Drug Discovery. 3 Units.**

This course is designed mainly for graduate students, with emphasis on new concepts in the discovery of small molecules and biologic drugs. Prerequisite: Advanced biochemistry course.

**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 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 Pharmacology I. 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 232. Molecular Pharmacology II. 4 Units.**

This is the second course in the Molecular Pharmacology series, effects of cardiovascular, endocrine, cancer chemotherapy, immunologic therapeutic agents and the mechanisms whereby these effects are induced. Drug classes will be presented to illustrate the effects of drug classes in the treatment of diseases. 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 235. Current Topics in Pharmacology and Toxicology. 2 Units.**

Each week this course focuses on a different area of research interest in pharmacology and toxicology. It involves discussions of assigned research papers that provide students with a current perspective and understanding of issues and techniques associated with the selected research topics. Graduate standing in the PCSP program.

**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 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 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.

## Physical Therapy

<http://www.pacific.edu/Academics/Schools-and-Colleges/Thomas-J-Long-School-of-Pharmacy-and-Health-Sciences/Academics/Doctor-of-Physical-Therapy.html>

Phone: (209) 946-2886

Location: Rotunda; Thomas J. Long School of Pharmacy and Health Sciences

Todd E. Davenport, PT, DPT, MPH, OCS

Program Director

## Programs Offered

### Doctor of Physical Therapy

## 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.

## 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.

Pacific's Doctor of Physical Therapy program is committed to:

1. Producing high caliber, practice-ready graduates evidenced by students' abilities to:
  - demonstrate safety and competence with current clinical skills;
  - demonstrate clinical reasoning that utilizes both the best available scientific evidence and the patient's perspective;
  - demonstrate cultural competence;
  - demonstrate attributes consistent with effective leadership and advocacy;
  - demonstrate accurate self-reflection; and
  - demonstrate characteristics consistent with long-long learning.
2. Contributing to the body of knowledge of the profession evidenced by students' abilities to:
  - engage in scholarly pursuits.
3. Providing leadership in the University and profession evidenced by students' abilities to:
  - hold leadership positions in the program, School and University, as well as local, national and international professional organizations.
4. Participating in on-going assessment to maintain currency and relevance in teaching and practice evidenced by students' abilities to:
  - participate in ongoing assessment activities.
5. Engaging in local, regional, national, and international service evidenced by students' abilities to:
  - engage in service.
6. Fostering diversity and cultural competence evidenced by students' abilities to:
  - demonstrate cultural competence.
7. Promoting life-long relationships with the Pacific Physical Therapy community evidenced by students' abilities to:
  - participate in alumni activities.

## 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) (<http://www.pacific.edu/dpt>).

### Learning Outcomes

1. Students will demonstrate safety and competence with current clinical skills.
2. Students will demonstrate clinical reasoning that utilizes both the best available scientific evidence and the patient's perspective.
3. Students will demonstrate cultural competence.
4. Students will demonstrate attributes consistent with effective leadership and advocacy.
5. Students will demonstrate accurate self-reflection, as indicated by the ability to evaluate their own performance of cognitive, psychomotor, and affective skills for potential learning opportunities in the context

of individual development and development of the physical therapy profession.

6. Students will demonstrate characteristics consistent with long-long learning.

## 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. At least 50 hours spent in one or more physical therapy practice settings that includes at least 25 hours with inpatients in an acute care hospital setting.
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 selection committee is required.

## Prerequisite Coursework

### Biology: Two Options

#### General Biology with lab or Cell Biology

4 semester credits/5-6 quarter credits minimum. The course should include animal biology.

#### OR Two courses in biological sciences (not botany); no lab requirement

6 semester credits/9 quarter credits minimum.

### Human Anatomy with lab

4 semester credits/5-6 quarter credits minimum. Vertebrate anatomy is acceptable if human anatomy is not available.

### Human Physiology with lab

4 semester credits/5-6 quarter credits minimum. Animal physiology is acceptable if human physiology is not available.

*Note: A single semester course that combines 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.

## Doctor of Physical Therapy

Students must complete a minimum of 100 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	2
PTHR 333	Analysis of Movement Through the Life Span	3
PTHR 334	Medical Conditions and Screening for Medical Disease	4
PTHR 335	Cardiovascular and Pulmonary Physical Therapy	4
PTHR 336	Clinical Experience I	1
PTHR 338	Clinical Experience II	1
PTHR 339	Motor Learning and Motor Control	2
PTHR 398	Research Literature Review	1
Term Units		18

### Second Year

#### Fall

PTHR 341	Integumentary Physical Therapy	1
PTHR 342	Administration and Management of Physical Therapy Services I	2
PTHR 344	Neuromuscular Physical Therapy	5
PTHR 345	Advanced Clinical Problems I	1
PTHR 346	Seminar	2
PTHR 347	Musculoskeletal Physical Therapy I	5
PTHR 351	Prosthetics and Orthotics	1
Term Units		17

#### Spring

PTHR 343	Geriatric Physical Therapy	1
PTHR 352	Administration and Management of Physical Therapy Services II	2
PTHR 353	Diagnostic Imaging for Physical Therapists	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 Professional Behavior	1
PTHR 359	Clinical Internship I	4
PTHR 381	Soft Tissue Mobilization and Taping	1
Term Units		17
<b>Summer</b>		
PTHR 368	Clinical Internship II	6
PTHR 369	Clinical Internship III	6
Term Units		12

Total Unit: 100

\* PTHR 380 and PTHR 393 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 as a member in that role. This course includes an introduction to the various practice areas of Physical Therapy. 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. 2 Units.

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. 3 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. Clinical Experience I. 1 Unit.**

This course consists of a clinical experience under the supervision of a licensed, qualified physical therapist(s) for the purpose of practicing basic examination and intervention techniques and professional behaviors learned in the first two terms of the program. Prerequisite: Successful completion of all previous DPT courses or permission of the instructor.

**PTHR 338. Clinical Experience II. 1 Unit.**

This course consists of a clinical experience under the supervision of a licensed, qualified physical therapist(s) for the purpose of practicing basic examination and intervention techniques and professional behaviors learned in the first year of the program. Prerequisite: Successful completion of all previous DPT courses or permission of 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 341. Integumentary Physical Therapy. 1 Unit.**

This course serves as an introduction to the integumentary system with a primary focus on wound and burn care. Topics include an in depth study of the healing process, the affect of disease on the healing process, and integumentary changes over the lifespan. Physical therapy evaluation and treatment options for burns and wounds of vascular, traumatic, and surgical origin are presented as well as precautions and contraindications associated with these interventions. Lab sessions cover wound assessments, debridement, adjunctive interventions, and dressings. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

**PTHR 342. Administration and Management of Physical Therapy Services I. 2 Units.**

This course is designed to provide an introduction to principles of management, with emphasis on the application of these principles in health care facilities and other patient care settings. The application of these principles within various physical therapy practice settings that include the clinical practice of physical therapy, is specifically addressed. As appropriate, discussion of issues that face the profession of physical therapy is included. Prerequisite: Successful completion of all previous DPT courses or permission of 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 346. Seminar. 2 Units.**

During this course students have opportunities to practice the range of physical therapy problem solving through analysis and discussion of various clinical scenarios. The continuum from evaluation to diagnosis to prognosis to treatment selection is incorporated into each presented discussion with emphasis on clinical decision-making and systems interaction approach to patient management. Prerequisite: 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 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. Administration and Management of Physical Therapy Services II. 2 Units.**

This course emphasizes the physical therapy profession and the practice of physical therapy as it is affected by the health care delivery system, professional organizations, State and Federal laws, professional ethics, professional issues and societal trends. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

**PTHR 353. Diagnostic Imaging for Physical Therapists. 2 Units.**

This course covers basic principles and interpretation of diagnostic imaging modalities as they apply to the physical therapist. This course covers medical imaging of musculoskeletal and neuromuscular/neurological systems. More common normal anatomical variants, as well as pathological variants and congenital anomalies are addressed. A discussion of special imaging techniques is also presented with the emphasis on CT scans and Magnetic Resonance Imaging (MRI). The course aims to prepare the students to recognize the importance of integrating imaging into clinical analysis of the patient's presentation and to incorporate the results of medical imaging studies when making clinical judgments. 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 facilitates the integration of all prior course work that uses 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 orthopaedic, neurological, integumentary, cardiopulmonary, and multiple systems disorders. Students perform all elements of patient care under faculty supervision. 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 Professional Behavior. 1 Unit.**

This course prepares students for their full-time clinical experiences. Students are oriented to the performance instrument that is used to evaluate their clinical performance. Teaching and learning methods used by clinical instructors are discussed, and students explore options for problem-solving and conflict resolution in the clinical setting. Through lectures, discussions, and group activities, students identify the cognitive, psychomotor, and affective behaviors that lead to success in the clinical environment. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

**PTHR 359. Clinical Internship I. 4 Units.**

This course consists of a full-time clinical experience under the supervision of a licensed physical therapist (designated as "Clinical Instructors" aka "CI") at specified facilities. Students have the opportunity to perform clinical rotations in a variety of clinical settings. Three Clinical Internships occur between Spring/Summer/Fall terms of the final graduate year. By conclusion of Clinical Internship III, students are required to complete one acute care experience and one outpatient clinical experience. A third experience is assigned according to student interest and clinical availability. Each rotation should be in a physically different clinical setting to provide the student with a well rounded education and to prepare him/her for entry level practice, as recognized by Commission on Accreditation in Physical Therapy Education. Prerequisite: Successful completion of all DPT courses or permission of instructor.

**PTHR 368. Clinical Internship II. 6 Units.**

This course consists of a full-time clinical experience under the supervision of licensed physical therapists (designated as "Clinical Instructors" aka "CI") at specified facilities. Students have the opportunity to perform clinical rotations in a variety of clinical settings. Three Clinical Internships occur between Spring/Summer/Fall terms of the final graduate year. By conclusion of Clinical Internship III, students are required to complete one acute care experience and one outpatient clinical experience. A third experience is assigned according to student interest and clinical availability. Each rotation should be in a physically different clinical setting to provide the student with a well rounded education and to prepare him/her for entry level practice, as recognized by Commission on Accreditation in Physical Therapy Education. Prerequisite: Successful completion of all previous DPT courses or permission of instructor.

**PTHR 369. Clinical Internship III. 6 Units.**

This course consists of a full-time clinical experience under the supervision of licensed physical therapists (designated as "Clinical Instructors" aka "CI") at specified facilities. Students have the opportunity to perform clinical rotations in a variety of clinical settings. Three Clinical Internships occur between Spring/Summer/Fall terms of the final graduate year. By conclusion of Clinical Internship III, students are required to complete one acute care experience and one outpatient clinical experience. A third experience is assigned according to student interest and clinic availability. Each rotation should be in a physically different clinical setting to provide the student with a well rounded education and to prepare him/her for entry level practice, as recognized by Commission on Accreditation in Physical Therapy Education. 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  
Jeannene Ward-Loneragan, Chair

## Program Offered

### Master of Science in Speech-Language Pathology

## Mission

Study and research in this department focus on normal and abnormal 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, Scottish Rite Language 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 licensure in Speech-Language Pathology. Students may also qualify for the California Speech-Language Pathology Services Credential.

The Master's degree program in Speech-Language Pathology is accredited by the Council of Academic Accreditation of the American Speech-Language-Hearing Association. All students must successfully complete clinical practicum requirements as an inherent part of the department program. A prerequisite to the participation in clinical practicum is admission to degree candidacy and/or permission of the departmental faculty. To receive a master's degree in Speech-Language Pathology, each student must demonstrate clinical competence as well as academic success. Clinical competence means:

1. The ability to identify individuals with communication handicaps;
2. The ability to perform comprehensive evaluation of individuals with communication handicaps;
3. The ability to effect positive changes in the communication skills of individuals with communication handicaps;

4. The ability to relate effectively to clients, their families and fellow professionals. Assessment of these competencies will be made by the faculty before recommending award of the degree.

## Major Field Competence

Demonstrate knowledge in the discipline

## Critical and Creative Thinking

Demonstrate critical and creative thinking

## Communication

Demonstrate effective oral and written skills

## Ethical Reasoning

Understand the importance of integrating ethical behavior in their personal and professional lives

## Collaboration & Leadership

Demonstrate the importance of collaborating with others within and across disciplines

## Intercultural and Global Perspectives

Understand the importance of embracing and serving a diverse world

## Program Specific Student Learning Outcomes

1. Demonstrate knowledge of communication disorders and differences and swallowing disorders, and methods of prevention, evaluation, and intervention.
2. Demonstrate skill in selecting appropriate tools and conducting evaluations with diverse populations and across the lifespan.
3. Demonstrate skill in conducting intervention with diverse populations and across the lifespan.
4. Demonstrate interaction and personal qualities consistent with the standards of the profession.
5. Demonstrate knowledge of school-based and medical-based speech-language pathology services.
6. Demonstrate knowledge of processes used in discipline-related research.
7. Demonstrate knowledge of counseling principles and practices applied to the practice of speech-language pathology with diverse populations and across the lifespan.
8. Demonstrate knowledge of standards of ethical conduct.
9. Demonstrate knowledge of processes used in research and of the integration of research principles into evidence-based clinical practice.
10. Demonstrate knowledge of contemporary professional issues.
11. Demonstrate knowledge of communication and swallowing disorders and differences, including the appropriate etiologies, characteristics, anatomical/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates.
12. 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.
13. Demonstrates skills in oral and written or other forms of communication sufficient for entry into professional practice.
14. 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.
15. 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 203 Clinical Methods I	1
SLPA 205 Adult Neurological Disorders I	3
SLPA 209 Language Disorders II	3
SLPA 211 Language Disorders III	3
SLPA 215 Aural Rehabilitation	3
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	2
SLPA 251 Behavior Modification for SLPs	2
SLPA 253 Medical Speech 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

## 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 101 Clinical Methods I	2
SLPA 103 Clinical Methods II	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 of Speech	3
SLPA 131 Phonetics	3
SLPA 137 Speech and Hearing Science	3
SLPA 139 Diagnostics	3
SLPA 143 Multicultural Populations	3
SLPA 201 Professional Issues	1
SLPA 203 Clinical Methods I	1
SLPA 205 Adult Neurological Disorders I	3
SLPA 209 Language Disorders II	3
SLPA 211 Language Disorders III	3
SLPA 215 Aural Rehabilitation	3
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	2
SLPA 251 Behavior Modification for SLPs	2
SLPA 253 Medical Speech 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.

**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.

**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.

**SLPA 107. Clinical Methods IV. 1 Unit.**

Students discuss and analyze current clinical experiences. They also explore different disorders, populations, and work environments.

**SLPA 110. Clinical Observations. 1 Unit.****SLPA 110A. Clinical Observations. 1 Unit.**

This course offers structured clinical observations for seniors not enrolled in SLPA 189A or SLPA 189B. Grading is Pass/No Credit only.

**SLPA 110B. Clinical Observations. 1 Unit.**

This course offers structured clinical observations for seniors not enrolled in SLPA 189A or SLPA 189B. Grading is Pass/No Credit only.

**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.

**SLPA 123. Language Disorders I. 3 Units.**

This introductory course examines the speech language and behavioral characteristics associated with mental retardation, hearing impairment, emotional disturbance and neurological involvement. Discussion of appropriate diagnosis and therapeutic techniques is included.

**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.

**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.

**SLPA 129. Anatomy and Physiology of Speech. 3 Units.**

Students examine the anatomy and physiology of the mechanisms of speech and hearing. This course is open to non-majors.

**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.

**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.

**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.

**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.

**SLPA 143. Multicultural Populations. 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. (DVSU, 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.

**SLPA 151. Behavior Modification for SLPs. 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.

**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.

**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.

**SLPA 189A. Beginning Clinic. 1 Unit.****SLPA 189B. Intermediate Clinic. 1 Unit.****SLPA 191. Independent Study. 1-4 Units.****SLPA 201. Professional Issues. 1 Unit.**

This seminar covers in ethical and legal issues, practice standards, employment and business considerations for the practice of speech-language pathology.

**SLPA 203. Clinical Methods I. 1 Unit.**

Observations and analysis of: therapy, materials, teaching methods, behavioral management and data collection. Prerequisite: Graduate standing in the Speech-Language Pathology program.

**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 a managing aphasia and motor speech disorders. Prerequisite: Graduate standing in the Speech-Language Pathology program.

**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. Prerequisites: SLPA 209 or permission of instructor.

**SLPA 215. Aural Rehabilitation. 3 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. Prerequisite: SLPA 127. Graduate standing.

**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. Prerequisite: Graduate standing in the Speech-Language Pathology program.

**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. Prerequisite: Graduate standing in the Speech-Language Pathology program.

**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. Graduate standing.

**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. Graduate standing.

**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. Graduate standing.

**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. Graduate standing.

**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, use of qualitative and quantitative data, and 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. 2 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 251. Behavior Modification for SLPs. 2 Units.**

This class will focus on basic and advanced principles of behavior modification as they relate to the area of communication sciences and disorders. Multiple strategies to increase, decrease, or modify behaviors will be introduced. Theoretical and applied experiences in planning intervention strategies, measurement techniques, generalization and maintenance of changed behaviors will be emphasized.

**SLPA 253. Medical Speech Pathology. 1 Unit.**

This course is designed to introduce graduate level clinicians in Speech-Language Pathology to the medical setting. Prerequisite: Graduate standing in the Speech-Language Pathology program.

**SLPA 255. Counseling Skills in Speech-Language Pathology. 2 Units.**

This course is directed to enhancing student's counselling skills, therapeutic effectiveness and relationship with future clients, and knowledge of areas and techniques important in counselling. 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.****SLPA 287B. Fieldwork in Speech and Hearing. 2 Units.****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. Graduate standing in the Department of Speech-Language Pathology.

SLPA 289A. Advanced Clinic. 1-3 Units.

SLPA 289B. Advanced Clinic. 1-3 Units.

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.

# UNIVERSITY ADMINISTRATION

## The Administration

Title	Name
President	Pamela A. Eibeck
Provost and Executive Vice President for Academic Affairs	Maria G. Pallavicini
Vice President for Business and Finance	Kenneth Mullen
Vice President for Student Life	Patrick K. Day
Vice President for University Development and Alumni Relations	Burnie Atterbury
General Counsel and Secretary to the Board of Regents	Kevin Mills
Vice President for Technology and Chief Information Officer	Art Sprecher
Associate Vice President for Marketing and Communications	Marge Grey
Associate Vice President for External Relations, Strategic Partnerships and Presidential Initiatives	Stacy McAfee
Associate Vice President for Planning	Linda Buckley
Director of Institutional Research	Mike Rogers
Director of Intercollegiate Athletics	Ted Leland

## Office of the Provost

Title	Name
Provost and Executive Vice President for Academic Affairs	Maria G. Pallavicini
Associate Vice President and Vice Provost for Enrollment Management	TBD
Vice Provost for Faculty Affairs	Berit Gunderson
Vice Provost for Undergraduate Education	Edith Sparks
Vice Provost for Strategy and Educational Effectiveness	Cyd Jenefsky
Associate Provost of Research	James Uchizono
Assistant Provost for Resource Management	Carrie J. Darnall
Assistant Provost for Diversity	Joan Lin-Cereghino
Chief of Staff to the Provost	Jared B. Gaynor
Assistant Vice Provost and Director of Admission	Christopher Krzak
Assistant Vice Provost and Executive Director of Financial Aid	S. Lynn Fox
Assistant Vice Provost for Enrollment Management and Director of Summer Sessions	Elisa Anders
Director, Center for Teaching and Learning	Lott Hill
Director, International Programs and Services	Ryan Griffith

University Registrar  
Margo Landy

## School and College Deans

Title	Name
Dean, College of the Pacific	Rena Fraden
Senior Associate Dean	Gregg Jongeward
Associate Dean and Director of General Education	Gesine Gerhard
Assistant Dean	Marcia Hernandez
Dean, Conservatory of Music	Peter Witte
Dean, Eberhardt School of Business (Interim)	David Dauwalder
Associate Dean, Academic Programs	Cynthia Eakin
Dean, Gladys L. Benerd School of Education	Vanessa Sheared
Associate Dean	Dymanek Mitchell
Dean, School of Engineering and Computer Science	Steven Howell
Associate Dean	Jennifer Ross
Assistant Dean	Gary R. Martin
Dean, Thomas J. Long School of Pharmacy and Health Sciences	Phillip Oppenheimer
Associate Dean for Academic Affairs	Eric Boyce
Associate Dean for Graduate Education and Research	Xiaoling Li
Associate Dean for Student Affairs and Organizations	Denis Meerdink
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 Ravnar
Dean, Graduate School	Thomas Naehr
Dean, Pacific McGeorge School of Law	Michael Schwartz
Associate Dean, Academic Affairs	Michael Colatrella Jr.
Associate Dean for Strategic Initiatives	Clark Kelso
Associate Dean, Faculty Scholarship	Raquel Aldana
Assistant Dean, Administration and Resource Management	Elisa Levy
Assistant Dean, Advancement, External Relations and Career Development	Mindy Danovaro

Assistant Dean, Law Library and Graduate and International Programs (Interim)	James Wirrell
Assistant Dean, Student Affairs	Mary McGuire
Assistant Dean, Admissions, Diversity Initiative and Financial Aid	Tracy Simmons
Dean, Arthur A. Dugoni School of Dentistry	Nader A. Nadershahi
Dean Emeritus	Arthur A. Dugoni
Executive Associate Dean, Associate Dean for Academic Affairs (Acting)	Richard E. Fredekind
Associate Dean, Administration	Eddie K. Hayashida
Associate Dean, Clinical Services	Sigmund H. Abelson
Associate Dean, Development	Jeff Rhode
Associate Dean, Fiscal Services	Edward Pegueros
Associate Dean, Student Services	Kathy Candito
Assistant Dean, Academic Affairs	Daniel J. Bender
Dean, University Library	Mary Somerville
Dean, University College	Patricia Campbell

## 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, Chief Investment Officer	Jol Manilay
Assistant Vice President, Facilities	Graeme Mitchell
Assistant Vice President, Human Resources	Greg Walters
Executive Director, Facilities Planning and Construction	Priscilla Meckley-Archuleta
Associate Controller	Audrey George
Director, Budget	Jonallie Parra
Director, Internal Audit	Randy Schwantes
Director, Procurement Services	Ronda Marr
Director, Risk Management	Roberta Martoza
Director, Student Business Services	Suzette Calderone
Director, Sacramento Campus	Patrick Faverty
Director, San Francisco Campus	Kara Bell
Director, University Payroll	Tara Juano

Assistant Director, Learning and Development	Shani Richards
Interim Director, Facilities Support Services	Mike Lawrie
Bookstore Manager	Nicole Castillo

## Office of Vice President for External Relations

Title	Name
Associate Vice President for External Relations, Strategic Partnerships and Presidential Initiatives	Stacy McAfee
Director of Special Events	Steve Whyte

## Office of the Vice President for Development and Alumni Relations

Title	Name
Vice President	Burnie Atterbury
Associate Vice President University Development and Alumni Relations	Cathy Wooten
Associate Vice President Development	Bill Johnson
Assistant Vice President Development	Scott Biedermann
Assistant Vice President Advancement Operations	Scott Rivinius
Executive Director Alumni Relations	Kelli Page

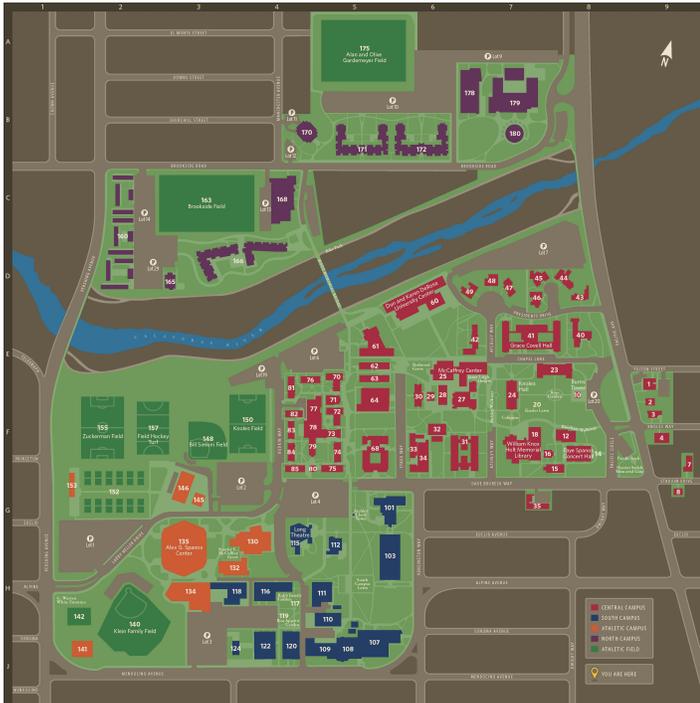
## Office of Vice President for Student Life

Title	Name
Vice President for Student Life	Patrick K. Day
Associate Vice President/Dean of Students	Rhonda Bryant
Senior Associate VP for Leadership, Diversity and Community Engagement	Steven Jacobson
Assistant Vice President, Health and Wellness	Lynn King
Assistant VP/Executive Director, Career Development	Tom Vecchione
Dean of Religious Life	Joel Lohr
Associate Dean, Student Conduct and Community Standards	Heather Dunn-Carlton
Executive Director, Assessment and Student Development Services	Sandra Mahoney
Executive Director, Educational Equity Programs	Anita Bautista
Executive Director, New Student and Family Programs	Linda Dempsey
Executive Director, Public Safety	Mike Belcher
Executive Director, Residential Life and Housing	TBD
Interim Director, Health Services	Lynn King
Director, Campus Career Partnerships	Deb Crane

Director, Center for Community Involvement	Erin Rausch
Director, Community Involvement Program	Allison Dumas
Director, Corporate & Employer Engagement	Chris Haruta
Director, Counseling Services	Stacie Turks
Director, Dining Services	Sia Mohsenzadegan
Director, Finance and Administration	Breann Northcutt
Director, Housing Operations and Technology	Michael Krieger
Director, Intercultural Student Success (formerly known as Multicultural Affairs)	TBD
Director, Recreation Program Services and Facilities	Marc Falkenstein
Director, Residential Life and Student Engagement	Dan Ocampo
Director, Services for Students with Disabilities	Danny Nuss
Director, Student Involvement	Dave Crafts
Director, University Bookstore	Nicole Castillo
Director, Upward Bound Program	Rosa Montes
Director, Wellness	Liz Thompson
Director, Women's Resource Center	Shannon Schipper

# CAMPUS MAP

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

# ACADEMIC CALENDAR

- Quarter Programs (p. 166)
- Semester Programs (p. 166)
- Semester Law Programs (p. 166)
- Trimester Programs (p. 166)

## 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

### College of the Pacific

All Programs

### Conservatory of Music

All Programs

### Eberhardt School of Business

All Programs

### Gladys L. Benerd School of Education

All Programs

### School of Engineering and Computer Science

All Programs

### School of International Studies

All Programs

### The Thomas J. Long School of Pharmacy and Health Sciences

Athletic Training

Pre-Pharm

Speech-Language Pathology

### University College

Organizational Behavior

## Semester Law Programs

### McGeorge School of Law

All Programs

## Trimester Programs

### Arthur A. Dugoni School of Dentistry

Physician Assistant Studies

### The Thomas J. Long School of Pharmacy and Health Sciences

Audiology

Pharmaceutical and Chemical Sciences

PharmD

Physical Therapy

**The calendar on this page is for the following program.**

### Arthur A. Dugoni School of Dentistry

Dental (DDS, IDS, Certificates, and Dental Graduate Programs)

## Summer 2018 Quarter

Description	Date(s)
Matriculation Week	July 10 - 13
Classes Begin	July 16
Labor Day Holiday	September 3
Study Day	September 25
Final Examination Period	September 26 - 28
Autumn Student Break	October 1 - 5

## Autumn 2018 Quarter

Description	Date(s)
Classes Begin	October 8
Thanksgiving Holiday Break	November 22 - 23
Study Day	December 18
Final Examination Period	December 19 - 21
Winter Student Break	December 24 - January 4

## Winter 2019 Quarter

Description	Date(s)
Classes Begin	January 7
Martin Luther King Jr. Holiday	January 21
President's Day Holiday	February 18
Study Day	March 19
Final Examination Period	March 20 - 22
Spring Student Break	March 25 - 29

## Spring 2019 Quarter

Description	Date(s)
Classes Begin	April 1
Memorial Day Holiday	May 27
Study Day	June 11
Final Examination Period	June 12 - 14
Commencement	June 16
Summer Student Break	June 17 - July 12

**The calendar on this page is for the following programs.**

### Arthur A. Dugoni School of Dentistry

Dental Hygiene

### College of the Pacific

All Programs

### Conservatory of Music

All Programs

### Eberhardt School of Business

All Programs

### Gladys L. Benerd School of Education

All Programs

## School of Engineering and Computer Science

All Programs

## School of International Studies

All Programs

## The Thomas J. Long School of Pharmacy and Health Sciences

Athletic Training

Pre-Pharm

Speech-Language Pathology

## University College

Organizational Behavior

## Fall 2018

Description	Date(s)
Orientation and Registration	
Graduate Student	(Registration) June 13 and (Orientation) August 24
New Freshman Orientation I	June 27 - 28
New Transfer Student Orientation I	June 30
New Transfer Student Orientation II	August 20
New International Student Orientation	August 20 - 21
New Freshman Orientation II	August 21 - 22
Payment Deadline for Fall 2018	August 1
Classes Begin	August 27
# Registration	August 27
Labor Day Holiday	September 3
# Last Day to Add Classes	September 7
# Last Day for Pass/No Credit or Letter Grade Option	September 7
# Last day to drop classes without record of enrollment	September 7
Deadline for Application for Graduation Fall 2018 (Graduate)	September 7
Census Date	October 1
Fall Student Break	October 5
Spring 2019 Schedule of Classes available Online	October 8
Homecoming (classes in session)	October 12 - 14
* Advising for Spring 2019 Registration for continuing students	October 15 - November 2
Last Day for Pro-Rated Refund	October 18
Last day to Withdraw	October 29
* Early Registration Appointments begin date for continuing students Spring 2019	October 29
Thanksgiving Break	November 21 - 23
Classes Resume	November 26
Classes End	December 7
Final Examination Period	December 10 - 14
Deadline for Application for Graduation Spring 2019/Summer 2019 (Graduate)	December 14
Deadline to file Petition to Walk in May 2019 Commencement (Summer 2019 Graduate)	December 14

## Spring 2019

Description	Date(s)
Payment Deadline for Spring 2019	January 1

New International Student Orientation	January 10 - 11
New Student/Transfer Orientation and Registration	January 10 - 11
New Graduate Student Orientation	January 11
Classes Begin	January 14
# Registration	January 14
Martin Luther King Jr. Holiday	January 21
# Last Day to Add Classes	January 25
# Last Day for Pass/No Credit or Letter Grade Option	January 25
# Last day to drop classes without record or enrollment	January 25
President's Day Holiday	February 18
Census Date	March 1
Last Day for Pro-Rated Refund	March 7
Summer 2019/Fall 2019 Schedule of Classes Available Online	March 11
Spring Break	March 11 - 15
Classes resume	March 18
* Advising for Summer 2019/Fall 2019 for continuing students	March 18 - April 5
Last day to withdraw	March 27
* Summer 2019 registration opens for continuing students (no appointments)	April 1
* Early Registration Appointments begin date for continuing students - Fall 2019	April 1
Deadline for Application for Graduation Fall 2019/ Spring 2020/Summer 2020 (Undergraduate)	April 4
Classes End	April 30
Study Day	May 1
Final Examination Period	May 2 - 8
Commencement	May 11

# 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 2018 & Spring 2019 Registration Dates

Description	Date(s)
Fall Registration Begins (Seniors, LLM, M.S.L., MPA, and MPP)	Tuesday, June 19, 2018
Fall Registration Begins (Continuing Students)	Wednesday, June 20, 2018
Spring Registration Begins (Seniors, LLM, M.S.L., MPA, and MPP)	Thursday, June 21, 2018
Spring Registration Begins (Continuing Students)	Friday, June 22, 2018

(Schedules distributed during New Student Check In at Orientation and available on insidePacific)

## Fall Semester 2018

Description	Date(s)
LLM Orientation Begins	Wednesday, August 1, 2018
First-Year JD Orientation Begins (Part-Time)	Tuesday, August 7, 2018
First-Year JD Orientation Begins (Full-Time)	Wednesday, August 8, 2018
First Year MSL, MPP and MPA Orientation Begins	Friday, August 10, 2018
Classes Begin	Monday, August 13, 2018
Add/Drop Deadline (Last day without administrative approval)	Monday, August 20, 2018
Labor Day (holiday)	Monday, September 3, 2018
Study Day (classes are made up on the last Tuesday of semester)	Friday, October 5, 2018
Last day of Classes (Tues. 11/20 is treated as a Friday for class purposes)	Tuesday, November 20, 2018
Thanksgiving Recess	Wednesday, Thursday, Friday, November 21-23, 2018
Reading Period	Saturday, November 24-Tuesday, November 27, 2018
Final Examination Period	Wednesday, November 28-Friday, December 14, 2018
Winter Break	Monday, December 17, 2018 - Tuesday, January 1, 2018

## Spring Semester 2019

Description	Date(s)
Intersession	Wednesday, January 2 - Sunday, January 6, 2019
Classes Begin	Monday, January 7, 2019
Martin Luther King Day (holiday)	Monday, January 21, 2019
Add/Drop Deadline (Last day to add/drop classes without administrative approval)	Monday, January 14, 2019
President's Day (holiday-classes made up on the last Weds. of semester)	Monday, February 18, 2019
Study Day (classes are made up on the last Tues. of the semester)	Friday, March 1, 2019
Spring Break	Monday, March 18 - Friday, March 22, 2019
Last day of Classes (Monday classes)	Wednesday, April 24, 2019

Reading Period	Thursday, April 25 - Sunday, April 28, 2019
Final Examination Period	Monday, April 29 - Monday, May 13, 2019
Commencement	Saturday, May 18, 2019

## Summer Sessions 2019

Description	Date(s)
Summer Registration Begins (Seniors)	Tuesday, March 12, 2019
Session 1	Tuesday, May 14 - Sunday, May 19, 2019
Session 2	Tuesday, May 14 - Sunday, June 09, 2019
Memorial Day (holiday)	Monday, May 27, 2019
Session 3	Monday, June 17 - Tuesday, August 6, 2019
Fourth of July (holiday)	Thursday, July 4, 2019

For information regarding tuition refunds, please refer to the McGeorge School of Law Refund Policy: [http://www.mcgeorge.edu/Future\\_Students/Costs\\_and\\_Aid/Tuition\\_and\\_Fees.htm](http://www.mcgeorge.edu/Future_Students/Costs_and_Aid/Tuition_and_Fees.htm)

## The calendar on this page is for the following programs.

**Arthur A. Dugoni School of Dentistry**  
Physician Assistant Studies

**The Thomas J. Long School of Pharmacy and Health Sciences**

Audiology  
Pharmaceutical and Chemical Sciences  
PharmD  
Physical Therapy

## Fall 2018

Description	Date(s)
Early Registration Fall 2018 - Incoming 1st year students	June 13 - September 7
Early Registration Fall 2018 - Incoming graduate students	June 13 - September 7
Payment deadline for Fall 2018	August 1
Advanced Pharmacy Practice Experiences	August 20 - December 21
Orientation	August 22 - 24
Classes Begin	August 27
# Registration	August 27
Labor Day Holiday	September 3
# Last Day to Add Classes	September 7
# Last Day to Drop Classes without record of enrollment	September 7

Census Date	October 1
Pharmacy Spring 2019 Schedule of Classes Available Online	October 8
Midterm Exams	October 8 - 12
Last Day for Pro-rated refund	October 15
* Advising for Pharmacy Spring 2019	October 15 - 19
* Early Registration Pharmacy Spring 2019	October 22 - January 18
Last Day to Withdraw	October 24
Thanksgiving Break	November 21 - 23
Classes Resume	November 26
Classes End	November 30
Final Examination Period	December 3 - 7

Midterm Exams	June 10 - 14
* Early Registration for Pharmacy Fall 2019	June 12 - September 6
Early registration Pharmacy Fall 2019 - Incoming 1st year students	June 12 - September 6
Early registration Pharmacy Fall 2019 - Incoming graduate students	June 12 - September 6
Last Day for Pro-Rated Refund	June 18
Last Day to Withdraw	July 1
Fourth of July Holiday Observed	July 4
Classes End	July 30
Final Examination Period	August 1 - 7
Census Date	September 1

## Spring 2019

Description	Date(s)
Payment deadline for Pharmacy Spring 2019	December 1, 2018
Deadline for Application for Graduation Spring 2019/Summer 2019 (Graduate)	December 14, 2018
Classes Begin	January 7
# Registration	January 7
Advanced Pharmacy Practice Experiences	January 7 - May 10
# Last Day to Add Classes	January 18
# Last Day to Drop Classes without record of enrollment	January 18
Martin Luther King Jr. Holiday	January 21
President's Day Holiday	February 18
Pharmacy Summer 2019 Schedule of Classes Available Online	February 18
Midterm Exams	February 19 - 22
* Advising for Pharmacy Summer 2019	February 25 - March 1
Last Day for Pro-Rated Refund	February 26
Census Date	March 1
* Early Registration for Pharmacy Summer 2019	March 4 - May 10
Last day to Withdraw	March 11
Deadline for Application for Graduation Fall 2019/ Spring 2020/Summer 2020 (Professional)	April 4
Classes End	April 9
Final Examination Period	April 11 - 17

## Summer 2019

Description	Date(s)
Payment deadline for Pharmacy Summer 2019	April 1
Deadline for Application for Graduation Fall 2019/ Spring 2020/Summer 2020 (Professional)	April 4
Classes Begin	April 29
# Registration	April 29
# Last Day to Add Classes	May 10
# Last Day to Drop Classes without record of enrollment	May 10
Commencement	May 18
Pharmacy Fall 2019 Schedule of Classes Available Online	May 20
Memorial Day Holiday	May 27
* Advising for Pharmacy Fall 2019	May 28 - June 7

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