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*“Trustees of The College of The
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ACT OF INCORPORATION

*Commonwealth of Massachusetts
in the Year One Thousand Eight Hundred and Sixty-Five*

**THE
COLLEGE
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HOLY CROSS**

A College of Arts and Sciences
Worcester, Massachusetts 01610



CATALOG

VOLUME 67

1971-72

1972-73

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Associate Professor, Philosophy
- Rev. John J. MacDonnell, S.J., S.T.L., Weston College; Ph.D., The
Catholic University of America
Associate Professor, Mathematics
- Rev. Robert B. MacDonnell, S.J., M.A., M.S., Boston College;
S.T.L., Weston College; M.S., Harvard University
Associate Professor, Physics
Coordinator of Institutes and Grants
- James Macris, Ph.D., Columbia University
Professor, English and Linguistics (Worcester Consortium)
- Rev. Arthur J. Madden, S.J., M.A., Boston College; S.T.L.,
Weston College
Assistant Professor, English
- Forbes M. Madzongwe, Cand. Ed.D., Clark University
Visiting Lecturer, History
- Joseph H. Maguire, Cand. Ph.D., University of Notre Dame
Instructor, Education
Acting Chairman, Department of Education
- Rev. Joseph A. Martus, S.J., Ph.L., Weston College; Ph.D.,
Clark University
Professor, Chemistry
Chairman, Department of Chemistry
Director, Graduate Department of Chemistry

- Rev. Tonino T. Mattucci, Ph.D., Harvard University
Assistant Professor, Italian
- John T. Mayer, Ph.D., Fordham University
Associate Professor, English
- Vincent O. McBrien¹, Ph.D., The Catholic University of America
Professor, Mathematics
- Barbara P. McCarthy, Ph.D., Yale University
Visiting Lecturer, Classics
- Bernard W. McCarthy, M.A., Clark University
Professor, Accounting
- B. Eugene McCarthy, Ph.D., University of Kansas
Assistant Professor, English
- C. Leigh McCarthy⁴, M.A., University of Illinois
Instructor, Mathematics
- Rev. Eugene D. McCarthy, S.J., S.T.L., Weston College; Cand.
Ph.D., St. Paul University
Instructor, Theology
- John R. McCarthy³, M.A., Boston College
Assistant Professor, Mathematics
- Rev. Leonard J. McCarthy, S.J., S.T.L., Weston College; Ph.D.,
Fordham University
Associate Professor, English
- Rev. Joseph E. McGrady, S.J., M.A., St. Louis University; S.T.L.,
Weston College
Associate Professor, Theology
- Michael G. McGrath, Ph.D., Massachusetts Institute of Technology
Assistant Professor, Chemistry
- John F. McKenna, Ph.D., Fordham University
Associate Professor, French
- Alvin H. McLean, Cand. Ph.D., University of Massachusetts
Visiting Assistant Professor, English (Worcester Consortium)
- Paul D. McMaster, Ph.D., Clark University
Associate Professor, Chemistry
- Rev. Robert G. McMillan, S.J., Ph.D., Western Reserve University;
S.T.L., Weston College
Assistant Professor, Sociology
- Clayton L. McNearney, Ph.D., University of Iowa
Assistant Professor, Theology

- Ogretta Vaughn McNeil, Ph.D., Clark University
Assistant Professor, Psychology
- Robert F. McNerney, Jr., Ph.D., Yale University
Professor, Spanish
- Joseph H. McSweeney, Ph.D., Fordham University
Associate Professor, Biology
- Capt. Robert E. Melia, USAF
Assistant Professor, Aerospace Studies
- Anna-Maria Moggio, Cand. Ph.D., Fordham University
Instructor, History
- Capt. Harry R. Moore, USN
Professor, Naval Science
Commanding Officer, NROTC Unit
- James W. Noonan, Ph.D., University of Maryland
Assistant Professor, Mathematics
- Louise J. Nordstrom, Ph.D., Clark University
Assistant Professor, Economics
- David J. O'Brien, Ph.D., University of Rochester
Associate Professor, History
Associate Director, Office of Special Studies
- John D. O'Connell, M.B.A., Boston University; C.P.A.,
Commonwealth of Massachusetts
Assistant Professor, Accounting and Economics
- John F. O'Connell, Ph.D., University of Wisconsin
Assistant Professor, Economics
- Walter T. Odell, Ph.D., Georgetown University
Assistant Professor, Political Science
Chairman, Department of Political Science
- Rev. William J. O'Halloran, S.J., S.T.L., Fac. St.-Louis Chantilly;
Ph.D., Fordham University
Associate Professor, Psychology
Chairman, Department of Psychology
- Rev. Neil P. O'Keefe, S.J., Cand. Ph.D., University of Pennsylvania
Visiting Lecturer, Political Science
- Rev. Innocent Onyewuenyi, Ph.D., Duquesne University
Assistant Professor, Philosophy
- Joseph W. Paciorek, Ph.D., Northwestern University
Assistant Professor, Mathematics

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Associate Professor, Philosophy
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Professor, Economics
Chairman, Department of Economics
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 of Guanajuato (Instituto Allende)
Assistant Professor, Fine Arts
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Professor, History
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Associate Professor, English
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- Berton Roffman, Ph.D., University of Georgia
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Professor, Psychology
- Capt. Henry J. Sage, USMC
Instructor, Marine Science
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Visiting Lecturer, Theology

- Rev. John J. Sampey, S.J., S.T.L., Weston College; Ph.D.,
Gregorian University
Professor, Classics
- Rev. T. Howland Sanks, S.J., Ph.D., University of Chicago
Assistant Professor, Theology
- Capt. John Santamaria, Jr., USAF
Assistant Professor, Aerospace Studies
- Rām Sarup, Ph.D., Johns Hopkins University
Professor, Physics
- Rev. Joseph S. Scannell, S.J., M.A., Boston College; S.T.L.,
Weston College
Assistant Professor, Fine Arts
Chairman, Department of Fine Arts
- Warren Schiff, Ph.D., University of California at Berkeley
Associate Professor, History
- Myron A. Schwager, Ph.D., Harvard University
Assistant Professor, Music
- Sally Anne Scully, Cand. Ph.D., Harvard University
Instructor, History
- Charles H. Severens, Cand. Ph.D., University of Michigan
Instructor, Russian
- Patrick Shanahan, Ph.D., Indiana University
Professor, Mathematics
- Emmett A. Shea, M.A., Boston University; M.A., Harvard
University
Lecturer, History
- Rev. Joseph J. Shea, S.J., M.A., Boston College; S.T.L.,
Gregorian University
Professor, Philosophy
- John Sistare
Visiting Lecturer, Computer Science
- Rev. Archie Smith, S.T.M., Union Theological Seminary
Visiting Lecturer, Theology
- Reginald J. Smith, M.Ed., Boston University
Associate Professor, Accounting and Business Law
- Rev. Thomas J. Smith, S.J., M.A., Georgetown University
Professor, Physics
- Emese Soos, Cand. Ph.D., University of Wisconsin
Instructor, French

- Leonard C. Sulski, Ph.D., University of Notre Dame
Associate Professor, Mathematics
Chairman, Department of Mathematics
- Frank R. Tangherlini, Ph.D., Stanford University
Associate Professor, Physics
- Stephen E. Teichgraeber, Ph.D., Rice University
Assistant Professor, English
- Melvin C. Tews, Ph.D., University of Washington
Associate Professor, Mathematics
- Andrew P. Van Hook, Ph.D., New York University
Professor, Chemistry
- George A. Vidulich¹, Ph.D., Brown University
Assistant Professor, Chemistry
- Susanna E. Waldbauer, M.M., N.E., Conservatory of Music
Visiting Lecturer, Music
- Edward F. Wall, Jr., Ph.D., Columbia University
Associate Professor, History
Chairman, Department of History
- Rev. John J. Walsh, S.J.¹, S.T.D., Gregorian University
Associate Professor, Theology
- Clifton E. Wheeler, Cand. Ph.D., Worcester Polytechnic Institute
Visiting Lecturer, Chemistry
- John H. Wilson, Ph.D., Yale University
Assistant Professor, English
- William J. Ziobro, Ph.D., Johns Hopkins University
Assistant Professor, Classics
- Rudolph L. Zlody, Ph.D., Fordham University
Associate Professor, Psychology
- William L. Zwiebel, Ph.D., University of Pennsylvania
Assistant Professor, German

Faculty Committees

EDUCATIONAL POLICY

Rev. John E. Brooks, S.J.,⁷ *Chairman*, Rev. Joseph R. Fahey, S.J.,⁷ *Secretary*, John B. Anderson,² Vincent J. Forde,¹ Rogers P. Johnson,¹ Rev. Robert G. McMillan, S.J.,² Leonard C. Sulski,² John J. Cangilos,⁶ '72, Joseph P. Collins⁶, '72.

NOMINATIONS AND ELECTIONS

Daniel G. Dewey,⁴ *Chairman*, Rev. Joseph R. Fahey, S.J.,⁷ Joseph J. Holmes.⁵

PROFESSIONAL STANDARDS

Edward F. Kennedy,¹ *Chairman*, Rev. William V. E. Casey, S.J.¹ (on lv 1971-72), Rev. John J. MacDonnell, S.J.¹ (filling unexpired term of Fr. Casey, on lv), Clyde V. Pax,² Paul S. Rosenkrantz,² Edward F. Wall.²

ACADEMIC STANDING

Daniel G. Dewey,¹ *Chairman*, Rev. Raymond F. X. Cahill, S.J.,² Rev. Francis O. Corcoran, S.J.,² Rev. Joseph R. Fahey, S.J.,⁷ Theodore P. Fraser¹ (filling unexpired term of Dr. Lawler, on lv), James R. Halpin.⁷ Thomas M. C. Lawler¹ (on lv 1971-72), Eileen M. Tosney⁷.

ADMISSIONS

Rev. John W. Flavin, S.J.,¹ *Chairman*, Francis P. Devlin,² Rev. Joseph R. Fahey, S.J.,⁷ Rev. Joseph M. Fallon, S.J.² (on lv. Spr. '72), James R. Halpin,⁷ Gerard B. Lavery (Spr. '72 only—replacing Fr. Fallon), Donald T. McClain,⁷ Robert F. McNerney,¹ Thomas F. Hehir,⁶ '72, Richard A. Marfuggi,⁶ '72, Gary W. Reid,⁶ '73.

CURRICULUM

William M. Ewald,¹ *Chairman*, Rev. William A. Carroll, S.J. (Fall '71 only—replacing Dr. Healy), Rev. Joseph R. Fahey, S.J.,⁷ William R. Healy² (on lv, Fall '71), Phyllis D. Keller, Joseph W. Paciorek,² Thomas D. Kuzmarski,⁶ '73, Doric C. Scarpelli,⁶ '73.

Code Key for Committees:

¹ Term expires June 1972.

² Term expires June 1973.

³ Term expires June 1974.

⁴ Term expires Mar. 1972.

⁵ Term expires Mar. 1973.

⁶ Student Members.

⁷ *Ex Officio*.

LIBRARY

Rev. Joseph R. Fahey, S.J.,⁷ James M. Mahoney,⁷ James F. Powers² (on lv, 1971-72), John E. Reilly,² Berton Roffman¹ (1971-72 only—replacing Dr. Powers on lv), Rev. John J. Walsh, S.J.¹ (on lv, 1971-72), Paul J. Ceplenski,⁸ '72, Thomas C. Putich,⁶ '73.

RESEARCH AND PUBLICATION

Robert L. Brandfon¹ (on lv, 1971-72), Rev. Joseph R. Fahey, S.J.,⁷ Rev. Robert F. Healey, S.J.,¹ Francis W. Kaseta¹ (filling unexpired term of Dr. Brandfon, on lv), Rev. Robert B. MacDonnell, S.J.,⁷ Robert W. Ricci.² Ricci.²

BOARD OF DIRECTORS OF ALUMNI ASSOCIATION

Rev. Raymond F. X. Cahill, S.J.,¹ John H. Wilson.¹

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ACADEMIC ADVISING

Rev. Joseph R. Fahey,⁷ *Chairman*, Rev. Paul F. Harman, S.J.,⁷ Joseph H. Maguire,⁷ William J. Ziobro.⁷

CAMPUS CENTER ADVISORY COUNCIL

Peter M. Balesano,⁷ Rev. Robert R. Burke, S.J.,² William M. Cousins, Jr.,⁷ Donald T. McClain,⁷ Rev. Robert G. McMillan, S.J.,¹ John F. O'Keefe,⁷ James C. Driscoll III,⁶ '73, H. Peter McCarthy,⁶ '72.

FINANCIAL AID

Francis H. Delaney,⁷ *Chairman*, Rev. Raymond F. X. Cahill, S.J.,¹ Rev. Vincent A. Lapomarda, S.J.,² John F. O'Connell,² John F. O'Keefe.⁷

STUDENT ACTIVITIES

Peter M. Balesano,⁷ *Chairman*, Rev. Raymond F. X. Cahill, S.J.,⁷ Rev. Francis O. Corcoran, S.J.,⁷ Paul R. Dommel,¹ Rev. Leonard J. McCarthy, S.J.,⁷ Rev. Joseph E. McGrady, S.J.,⁷ Louis J. Nordstrom,² James W. Carney,⁶ '73, Brian R. Forts,⁶ '74, Timothy R. Murphy,⁶ '72.

GRADUATE STUDIES

Rev. Alfred R. Desautels, S.J.,⁷ *Chairman*, Edward F. Callahan,² Rev. Robert F. Healey, S.J.,² Paul D. McMaster,¹ Walter T. Odell.¹

JUNIOR YEAR ABROAD

John D. O'Connell,⁷ *Chairman*, Hermann-Josef Cloeren,¹ Rev. William H. FitzGerald, S.J.,² Maurice A. Geracht,¹ Richard B. Klein.²

PREMEDICAL AND PREDENTAL PROGRAMS

Michael G. McGrath,⁷ *Chairman*, Rev. Robert F. Banks, S.J.¹ (filling unexpired term of Dr. Happe, on lv), Jan Beyea,² Robert S. Crowe¹ filling unexpired term of Dr. Lawler, on lv), William R. Fitzsimmons,² Kenneth F. Happe¹ (on lv, 1971-72), Thomas M. C. Lawler¹ (on lv, 1971-72), Peter Perkins,² John H. Wilson.²

SPECIAL STUDIES

Phyllis D. Keller,⁷ *Chairman*, Raymond W. Copson,² Rev. John W. Flavin, S.J.,¹ Edward J. Kealey,¹ John E. Reilly.²

FILM SERIES

Charles A. Baker,⁷ *Chairman*, Rev. William H. FitzGerald, S.J.,² Maurice A. Geracht,¹ Rev. William J. O'Halloran, S.J.,¹ John J. Kelley,⁶ Grafton J. Nunes,⁶ '72, Thomas E. O'Brien,⁶ '73.

LECTURES AND CONCERTS

Rogers P. Johnson,⁷ *Chairman*, Peter M. Balesano,⁷ Richard B. Klein,¹ Gerard B. Lavery,¹ Joseph W. Paciorek,² William F. Bagley, Jr.,⁶ '73, Joseph A. Diamond,⁶ '72, Michael J. Murray,⁶ '73.

STUDENT PERSONNEL POLICIES

Donald T. McClain,⁷ *Chairman*, Rev. Robert R. Burke, S.J.,² Rev. William H. FitzGerald, S.J.,⁶ Michael G. McGrath,² Rev. Robert E. Manning, S.J.,⁷ Clyde V. Pax,¹ Matthew A. Toth,⁷ William F. Fallon, Jr.,⁶ '72, Allan F. Kramer II,⁶ '72, Peter A. Poggioli,⁶ '72.

Objectives

It is the intent of the College of the Holy Cross to create and to foster a formal educational context in which all concerned may pursue the ultimate human questions, entertain the highest human hopes, and move towards the most basic human decisions. In short, the College seeks to become an occasion for a learning and, even, a wisdom that is *religious*, not in its captive, but in its utmost meaning.

The ideal graduates of Holy Cross should be characterized by a radical openness, a sense of wonder, and a deep humility before the inexhaustible richness of everything that is. They should have the ability to distinguish the different ways and methodologies of human knowing and to evaluate the levels of meaning. When in possession of meaning, they should be able to share and communicate it effectively. They should understand and be able to evaluate their own culture (its literature, art, and philosophy) both in its historical development and in its present structure. Moreover, they should have some familiarity with and appreciation of other cultures. Finally, they should recognize the need not only for dispassionate inquiry but also the more ultimate kinds of searching which necessarily involve the dedication of one's life and risk the very being of a person.

The graduates should be morally decisive in confronting life, courageous and hopeful in exercising initiative, yet loyal to legitimate authority. This will demand a positive-minded patience that is neither passivity nor abandonment of ideals. In response to the demands of the wisdom tradition which undergirds all cultures, a vocation further specified by the contemporary needs and potential of human society, they will be personally dedicated and generously committed to creative involvement and leadership in the intellectual, social, cultural, religious life of the world.

As persons they should be so open in love to God and men of every race and creed, that they may combine sympathetic action in a pluralistic world with intense dedication to their own values and beliefs. They should continually grow in the consciousness that man *is* evolution and, by accepting the responsibilities of the human tenancy of place and time, stand ready to give their energies and their trust in the name of a future hope.

A Liberal Education . . .

The College of the Holy Cross is committed to the excellence of the liberal arts for forming a well-educated person. The faculty and students of the College participate in an unhindered pursuit of truth, seeking evidence

wherever it may be found, in nature, in reason, in revelation, and probing all the implications of truth, both speculative and practical.

A broadening curriculum in the arts and sciences is offered, wherein the student's powers of reasoned analysis and synthesis are sharpened by mathematics, the inductions of the natural sciences and the deductions of philosophy; his understanding of man is broadened by great literature; a creative imagination is aroused and aesthetic awareness intensified by the fine arts and theatre art; communication is refined by a study of languages. History contributes a sense of time and timeliness; the social sciences, a consciousness of the factors shaping society; theology, the intellectual foundation for man's relationship with God.

Combining this general curriculum with that degree of special competence students will need to enter upon careers of their own choosing, the College offers opportunities to major in biology, chemistry, classics, economics, economics-accounting, English, fine arts, history, mathematics, modern languages and literatures (French, German, Italian, Russian, Spanish, Studies in European Literature), philosophy, physics, political science, psychology, sociology, and theology.

. . . in the Judaeo-Christian Tradition

While the ideals of a liberal education had their origin outside the Judaeo-Christian tradition, they have, in the West, grown up together and have again and again interpenetrated each other. The College, in its long history, has always attempted to encourage the kind of faith commitment that leads to seeing more and to discovering wider meanings in the context of a liberal education.

A continuing monument to the intellectual and spiritual labors of the Fathers of the Society of Jesus, who founded and guide the College, and to their personal dedication to the Christian faith, Holy Cross welcomes to full membership in its student body and faculty those of other faiths who share its devotion to the enterprise of a liberal education pursued with religious insight.

The College Chaplaincy makes available to Catholic students a program of worship, study, and community involvement, with a view to deepening an awareness of the Church's continuing redemptive action, and affording a clearer perception of the student's role as a member of that Church. The Jesuit Fathers of the faculty and administration, whether as individuals or as chaplains of the College, offer the opportunity for religious counsel and direction.

Responsibility

It is the constant purpose of the College to encourage the growth of personal and corporate responsibility consistent with the mature liberty of the educated man. Serious breaches of the code that demands respect for order, morality, personal honor and the rights of others will necessitate withdrawal from the College. The College reserves the right to dismiss a student at any time without any definite public charge. Detailed regulations and customs governing discipline are found in the Student Handbook.

History of the College

In 1843 the Most Rev. Benedict Joseph Fenwick, Second Bishop of Boston, founded the College of the Holy Cross. He gave the College the name of his Cathedral with the motto and seal of the Boston Diocese. He entrusted the direction of the College to the Fathers of the Society of Jesus. Classes began on November 2, 1843, and in 1844 the first college building was erected to accommodate ninety students. However, with the exception of the east wing, this building was destroyed by fire on July 14, 1852. With the cooperation of the Bishop of Boston, Most Rev. John B. Fitzpatrick, the Fathers of the Society provided for the building of Fenwick Hall, and the College was reopened in October, 1853, with a newly-enrolled freshman class. The first graduation class of this new period was that of 1858. From 1849 to 1853 and from 1858 to 1865, degrees were conferred by Georgetown University. In 1865 the College received its charter from the state and conferred its own degrees.

In 1868 a west wing was added and the central building was raised one story and capped with two stately towers. In 1875 the east wing of the building was raised and extended. In 1893 O'Kane Hall, really a wing of Fenwick Hall, was built, and classes were held in the new addition in the following year. By 1904 the college enrollment, Alumni Hall was built under the direction of the President, Rev. Joseph F. Hanselman, S.J. With continued growth, a new dormitory, Beaven Hall, was opened in 1914, in the Presidency of Rev. Joseph N. Dinand, S.J. It was named after Rt. Rev. Thomas D. Beaven, '70, Bishop of Springfield, who had sponsored its construction.

By 1920 the student body had increased to almost eight hundred so that a new dormitory, Loyola Hall, was opened under the direction of Rev. James J. Carlin, S.J., in 1922. In 1924 St. Joseph's Memorial Chapel was dedicated. The Dinand Memorial Library was opened in 1927, under the Presidency of Rev. John M. Fox, S.J. Kimball Hall, the general student center, was erected in 1935, under the aegis of President Francis J. Dolan, S.J. Wheeler Hall was opened in January, 1940, in the Presidency of Rev. Joseph R. N. Maxwell, S.J., during whose term of office Loyola Hall was renamed Carlin Hall.

In 1941 a peacetime Naval ROTC Program was inaugurated, but it was soon converted into the V-1, V-5, V-7, V-12 wartime programs. In the wartime centennial year of 1943, the student body numbered 1,200. On June 26, 1946 the naval wartime programs were discontinued, and the College reverted to its peacetime status.

In 1947 under the Presidency of Rev. William J. Healy, S.J., and intramural gymnasium was added to the college buildings. In the following year, Station WCHC was dedicated. In 1951, a new Biology building was dedicated by the President, Rev. John A. O'Brien, S.J. On July 1, 1951, the Air Force Reserve Officers' Training Corps was established at the College, and training began in September. By 1954 the enrollment was over 1,800 so that two dormitories, Hanselman and Lehy, were constructed under the direction of Rev. John A. O'Brien; S.J. In 1959, the renewed emphasis upon science was reflected with the dedication by President William A. Donaghy, S.J. of the Haberman science building. This building was named in honor of the memory of Rt. Rev. Richard J. Haberman, P.A., Class of 1906.

On June 16, 1960, Reverend Raymond J. Swords, S.J., became the twenty-fourth president of the College. Under his direction the most ambitious development program in the history of the College was undertaken for several projects considered essential to Holy Cross. Three new residence halls were constructed on the upper campus level, and named for President James Clark, S.J., the Most Reverend James A. Healy, an alumnus who became America's first Catholic bishop of Negro ancestry, and the Reverend Thomas F. Mulledy, S.J., the College's first president. The most recent of these, Mulledy Hall, was opened in September 1966. Loyola Hall, completed in September 1965, houses the new Jesuit faculty residence and a student infirmary that is a licensed hospital. That same year, a new maintenance building was completed. In October 1967, the College opened the Henry M. Hogan Campus Center which contains complete facilities for student faculty activities. And that same year, the College joined with the other colleges in the Metropolitan Worcester Area to form the Worcester Consortium for Higher Education.

On July 1, 1970, Reverend John E. Brooks, S.J., became the twenty-fifth president of the College, taking over the direction of an institution which has in recent years experienced marked changes in curriculum and several other areas. As vice president and dean of the College for two years, Father Brooks had been a moving force in many of these changes and thus began his duties as the College's leader with few of the usual transitional problems. Like his predecessor, the new president has long been connected with Holy Cross, as student, faculty member, and administrator.

Presidents of Holy Cross

1843-1970

- 1843-45 Rev. Thomas F. Mulledy, S.J.
- 1845-48 Rev. James Ryder, S.J.

Presidents (continued)

1848-51	.....	Rev. John Early, S.J.
1851-54, 1857-61, 1869-72	.....	Rev. Anthony F. Ciampi, S.J.
1854-57	.....	Rev. Peter J. Blenkinsop, S.J.
1861-67	.....	Rev. James Clark, S.J.
1867-69, 1883-87	.....	Rev. Robert W. Brady, S.J.
1872-78	.....	Rev. Joseph B. O'Hagan, S.J.
1878-83	.....	Rev. Edward D. Boone, S.J.
1887-89	.....	Rev. Sammuel Cahill, S.J.
1889-93	.....	Rev. Michael O'Kane, S.J.
1893-95	.....	Rev. Edward A. McGurk, S.J.
1895-1901	.....	Rev. John F. Lehy, S.J.
1901-06	.....	Rev. Joseph F. Hanselman, S.J.
1906-11	.....	Rev. Thomas E. Murphy, S.J.
1911-18, 1924-27	.....	Rev. Joseph N. Dinand, S.J.
1918-24	.....	Rev. James J. Carlin, S.J.
1927-33	.....	Rev. John M. Fox, S.J.
1933-39	.....	Rev. Francis J. Dolan, S.J.
1939-45	.....	Rev. Joseph R. N. Maxwell, S.J.
1945-48	.....	Rev. William J. Healy, S.J.
1948-54	.....	Rev. John A. O'Brien, S.J.
1954-60	.....	Rev. William A. Donaghy, S.J.
1960-70	.....	Rev. Raymond J. Swords, S.J.
1970-	.....	Rev. John E. Brooks, S.J.

The Campus

ALUMNI HALL, given by former students, contains student residences on the upper floors, classrooms and faculty offices on the lower floors. It was opened in 1904.

THE ATHLETIC FIELDS AND INTRAMURAL GYMNASIUM contain the football gridiron, the baseball diamond, the quarter-mile track, tennis courts, basketball courts, and facilities for all other outdoor and indoor sports. The baseball diamond on Fitton Field is bounded on the east by the football gridiron which is surrounded on four sides by stadia seating nearly 23,000. Freshman Field and Alumni Field are suitable for practice and for the games of the intramural teams. On the plateau that crowns the hill south of the college buildings, as well as on the lower east level, are laid out diamonds and fields for intramural contests, in which the majority of undergraduates participate. The Intramural Gymnasium was constructed in 1947.

BEAVEN HALL is named in honor of Bishop Thomas D. Beaven of Springfield, '70, who sponsored its construction. Opened in 1914, it contains classrooms and a student lounge on the first floor and student residences above.

BISHOP HEALY HALL was constructed during 1962. It is named for the late Most Rev. James A. Healy, Valedictorian of the College's first graduating class of 1849, the first American bishop of Negro ancestry, and the second bishop of Portland, Maine. The building contains living accommodations for students and faculty members and has a student lounge on the first floor.

CAMPION HALL was opened in 1936 to provide living quarters for a limited number of students, converted to a student service facility in 1962 and completely renovated in 1969 for student residences.

CARLIN HALL was opened under the direction of Rev. James J. Carlin, S.J., as Loyola Hall in 1922 and later was re-named for Father Carlin, who was President from 1918-24. Student residences occupy the upper floors and classrooms and faculty offices are located on the lower floors.

CLARK HALL was constructed in 1962 and is dedicated to the late Rev. James P. Clark, S.J., President of the College from 1861-67. It contains living accommodations for students and faculty members and has a student lounge on the first floor.

DINAND LIBRARY was opened in 1927 and bears the name of the late Rev. Joseph N. Dinand, S.J., President of the College from 1911-18 and again during the years 1924-27. It contains more than 260,000 volumes, the Louise Imogene Guiney and David I. Walsh collections.

FENWICK HALL is the oldest of the college buildings. It is named for the founder of Holy Cross, the late Most Rev. Benedict Fenwick, second Bishop of Boston, who founded the College in 1843. Fenwick Hall was opened in 1844, destroyed by fire in 1852. It was rebuilt in 1853, with additions in 1868 and 1875. It contains administrative and faculty offices, as well as studios for arts programs.

HABERLIN HALL, constructed in 1959, accommodates the facilities of the Chemistry, Physics and Mathematics departments. Named for the late Rt. Rev. Msgr. Richard J. Haberlin, '06, former President of the Alumni Association and Pastor of St. Peter's Church in Dorchester, Mass. The building contains the Rev. Joseph T. O'Callahan, S.J. Science Library, named in honor of the late Emeritus Professor of Mathematics and Philosophy, and the first Chaplain to receive the Congressional Medal of Honor.

HANSELMAN HALL was constructed during 1954 and bears the name of the late Rev. Joseph F. Hanselman, S.J., President of the College from 1901-1906. It contains living accommodations for students and faculty members and has a student lounge on the first floor.

HENRY M. HOGAN CAMPUS CENTER, opened in October, 1967, offers a wide variety of services and facilities, providing a broad social, cultural, educational and recreational program for the entire college community. Named for Henry M. Hogan, '18, LL.D. '43, the Center is committed to continuing education and to complementing formal instruction with meaningful leisure-time activities.

KIMBALL HALL was constructed in 1935 and honors the name of Rev. Charles L. Kimball, S.J., former Classics professor at Holy Cross. It contains the student dining room and auditorium.

LEHY HALL was constructed during 1954. Dedicated to the late Rev. John F. Lehy, S.J., President of Holy Cross during the years 1895-1901. It contains living accommodations for students and faculty members and has a student lounge on the first floor.

LOYOLA HALL, the faculty residence and college infirmary, was opened in September, 1965 and named for the founder of the Society of Jesus, St. Ignatius Loyola.

MULLEDY HALL is the newest student residence, providing accommodations for nearly 400 students. Opened in 1966, and named in honor of the College's first President, Rev. Thomas F. Mulledy, S.J., this hall also contains lounges, meeting rooms, and areas for quiet study.

O'KANE HALL, built in 1893, stands at the summit of Linden Lane, the main entrance to the College. It honors the late Rev. Michael O'Kane, President of Holy Cross from 1889-93. On the main floor is the visitors' reception lounge and on upper floors are administrative and faculty offices, and the new Fenwick Theatre.

O'NEIL MEMORIAL HALL was opened in 1951 and is dedicated to the William F. O'Neil family; benefactors of the College. Located on the western side of Beaven Hall, it contains classrooms and facilities of the Biology department.

ST. JOSEPH'S MEMORIAL CHAPEL AND THE MARY CHAPEL are dedicated to the memory of the graduates of Holy Cross. Each of the two chapels contains a seating capacity of 900. The Memorial Chapel was constructed in 1924 and the Mary Chapel, which occupies the lower floor, was opened in 1955.

WHEELER HALL was opened in 1940 and honors the late Rev. John D. Wheeler, S.J., a former college administrator. It contains classrooms on the lower floor and student residences on the upper floors.

Affiliations

The better to promote its educational ideals and to share in the fruits of scholarship of other institutions of learning, the College of the Holy Cross holds institutional membership in the following organizations:

The American Alumni Council, The American Association of Emeriti, The American Association of Collegiate Registrars and Admissions Officers, The American Association of Higher Education, The American College Health Association, The American College Public Relations Association, The American Conference of Academic Deans, The American Council of Learned Societies, Association of Jesuit Colleges and Universities, The American Council on Education, The American Mathematical Society, The American School of Classical Studies of Athens, The American School for Oriental Research, The Association of American Colleges, The Association of American Universities, The Association of College Deans and Advisers, Association of College Unions—International, The Association of Independent Colleges and Universities in Massachusetts, The College Entrance Examination Board, Consortium of Supporting Institutions of the Hebrew Union College Biblical and Archaeological School of Jerusalem, The Educational Testing Service, The Institute of European studies, Massachusetts Council on Teacher Education, Mathematical Association of America, National Association of Student Personnel Administrators, National Catholic Education Association (National and New England), National Collegiate Honors Council, The National Commission on Accrediting, The National Educational Association, The New England Association of Colleges and Secondary Schools, New England Teacher Preparation Association, Regents of the University of the State of New York, Society for Scientific Study of Religion, Worcester Consortium for Higher Education.

Members of the faculty are associated with: The Acoustical Society of America, The American Academy of Political and Social Science, The American Accounting Association, The American Association for the Advancement of Science, The American Association of Jesuit Scientists, The American Association of Physics Teachers, The American Association of Teachers of French, The American Association of Teachers of German, The American Association of Teachers of Italian, The American Associations of Teachers of Slavic Languages, The American Association of Teachers of Spanish and Portuguese, The American Association of University Professors, The American Catholic Historical Association, The American Catholic Psychological Association, The American Catholic Sociological Society, The American Chemical Society, The American Economic Association, The American Educational Theatre Association, The American Electrochemical Society, The American Historical Associa-

tion, The American Institute of Certified Public Accountants, The American Institute of Chemists, The American Jesuit Historical Conference, The American Mathematical Society, The American National Theatre and Academy, The American Personnel and Guidance Association, The American Philological Association, The American Physical Society, The American Political Science Association, The American Psychological Association, The American Society for Public Administration, The American Sociological Association, The American Statistical Association.

Also, The Archaeological Institute of America, The Association of Existential Psychology and Psychiatry, The Association of Librarians of America, The Catholic Biblical Association of America, The Catholic Classical Association of New England, The Catholic Theological Society of America, The Chemical Society (London), The Church Society for College Work, The Classical Association of New England, The Eastern Association of College Deans and Advisors of Men, The Eastern Psychological Association, The Faraday Society, The Franklin Institute (Philadelphia), The Institute of Mathematical Statistics, The Institute for Electrical and Electronic Engineers, Institute of Physics, The Jesuit Philosophical Association, The Massachusetts Council of Teacher Education, The Massachusetts Psychological Association, The Mathematical Association of America, The Modern Language Association of America, The National Catholic Industrial Conference, The National Liturgical Conference, The National Psi Chi, The New England Association of Chemistry Teachers, The New England Psychological Association, The New England Theatre Conference, The New England Regional Law Association, New York Academy of Sciences, The New York Association of Clinical Psychologists, The Optical Society of America, The Physical Society (London), The College Theology Society, The Religious Education Association, The Society of Biblical Literature, The Society of Sigma Xi, Population Association of America, Society for the Study of Social Problems and United Prison Association, United States Institute for Theatre Technology.

Association of Jesuit Colleges and Universities

Colleges and Universities

Alabama

Spring Hill College, Spring Hill

California

Loyola University of Los Angeles
Santa Clara University, Santa Clara
University of San Francisco

Colorado

Regis College, Denver

Connecticut	Fairfield University, Fairfield
District of Columbia	Georgetown University, Washington
Illinois	Loyola University, Chicago
Louisiana	Loyola University, New Orleans
Maryland	Loyola College, Baltimore
Massachusetts	Boston College, Chestnut Hill
	College of the Holy Cross, Worcester
Michigan	University of Detroit, Detroit
Missouri	Rockhurst College, Kansas City
	St. Louis University, St. Louis
Nebraska	The Creighton University, Omaha
New Jersey	St. Peter's College, Jersey City
New York	Canisius College, Buffalo
	Fordham University, New York City
	Le Moyne College, Syracuse
Ohio	John Carroll University, Cleveland
	Xavier University, Cincinnati
Pennsylvania	St. Joseph's College, Philadelphia
	University of Scranton, Scranton
Washington	Gonzaga University, Spokane
	Seattle University, Seattle
West Virginia	Wheeling College, Wheeling
Wisconsin	Marquette University, Milwaukee

General Information

Admission

Admission Procedure

All correspondence pertaining to admission to Holy Cross should be addressed to the Director of Admissions. No application for admission to the class entering in September will be accepted after *February 1*, except for compelling reasons.

All candidates must take the College Board Scholastic Aptitude Test and three Achievement Tests. These tests must be taken in November, December, January or March of the senior year in high school, preferably in November, December or January. All candidates must take the Achievement Test in English Composition during senior year of secondary school. Candidates who will continue at Holy Cross the modern foreign language studied in secondary school must take a Modern Language Achievement Test in that language. This test will be used for placement purposes. Candidates who will study mathematics in their freshman year at Holy Cross as a required or elective course must take the Level II Mathematics Achievement Test. This test will be used for placement purposes. Therefore, the Level II Achievement Test taken in May of the senior year will be acceptable. Candidates whose freshman curriculum does not require the taking of either the Modern Language or Mathematics Level II Achievement Tests may substitute any two tests of their own choosing.

Applications will be accepted only from those students who have graduated from, or who are in the last year at an approved secondary school and who offer sufficient proof of scholarly endeavor within the bounds of a college preparatory program at this approved secondary school. The Admissions Board will give preferential consideration to those applicants whose secondary school records give evidence of superior scholastic achievement, and who merit from their school officials recommendation for college entrance. The results achieved in the College Board Tests will also be a factor in the decision of the board. *It is the responsibility of the candidate to arrange that all College Board scores be sent to the Office of Admissions directly from the College Entrance Examination Board. All acceptances are made with the presumed condition that all senior year courses and examinations will be successfully completed.*

Application for admission to the College is encouraged of all academically qualified candidates regardless of their religious affiliation, race, or national origin.

Quantitative Admission Requirements

While the College does not demand specific academic unit requirements for admission, candidates must submit evidence of superior achievement within the framework of a program which prepares the candidate for the work of a liberal arts college. A program of this nature, customarily referred to as a college preparatory course, should emphasize study in English, mathematics, foreign language (ancient or modern), science, history and social studies. However, some deviation from this type of secondary school preparation may not necessarily disqualify a candidate for admission to the College, since the Admissions Board is more concerned with the ability of the candidate to perform well in an intellectual endeavor than with the actual content of that endeavor. The Board also takes specific note of the individual talents and qualities of candidates as well as the extent of their extra-curricular involvement. The Board then reviews all these facts in the light of the candidate's potential as a student and eventual graduate of the College.

Past experience has shown that most of the successful candidates have usually had a secondary school background which included the following units: foreign language (ancient or modern), 2 units in each of two languages or 3 units in one language; English, 4 units; mathematics, 3 units generally, 4 units for those candidates whose major would require the inclusion of college level mathematics as part of the required curriculum; history and/or social studies, 2 units; laboratory science, 2 units.

Advanced Placement

The College offers and encourages advanced placement for students suitably prepared. The College's policy presupposes that the candidate has pursued a strictly college-level course in the subject in which advanced placement is sought and has attained in the Advanced Placement Test of the College Board program a test score acceptable both to the Admissions Board and the chairman of the particular department concerned. Normally the lowest Advanced Placement Examination grade acceptable for advanced placement or credit or both is a 3.

Early Decision

To superior students who have selected Holy Cross as their first choice among those colleges in which they are interested and who have taken the required College Board examinations in junior year, the College offers an Early Decision Program which allows them to submit an application prior to November 1 of the senior year. Under this Program, the Admissions

Board will evaluate the application and inform the candidate of its decision no later than December 1.

The early decision candidate who will need financial aid should file a copy of the Parents Confidential Statement with the College Scholarship Service prior to October 15 in order that the candidate may be notified of any financial grant at the time of the admissions decision.

Should the decision of the Admissions Board be negative, the candidate need not re-apply but will be required to retake all College Board examinations during senior year as well as have an official transcript of 7th semester grades sent to college. The application will be given full consideration at the regular time.

The Admissions Board assumes that those candidates who apply to the Early Decision Program will definitely accept an offer of admission should it be tendered, provided it include adequate financial aid if such is needed. Consequently, while permitting the candidate to initiate other applications, the Admissions Board requires that, upon notification of acceptance to the College, all other applications be immediately withdrawn and a validating deposit fee of \$200.00 be submitted in early January.

Early Admission

Through its program of Early Admission, by which outstanding candidates enter one year early, the College also welcomes the applications of superior high school juniors, recommended by their high school officials as having already attained a high degree of personal maturity and social adjustment. Such applications must be submitted prior to August 1. The required College Board Examinations must have been taken during the junior year of high school.

Admission of Transfer Students

Admission to the College with advanced standing is based on superior work completed at another institution. Students interested in transferring to Holy Cross should request transfer application material from the Office of Admissions. The application should be completed ordinarily prior to June 1, for the fall semester; prior to December 1 for the spring semester. Decision to accept a transfer-applicant will be based on evidence of a strong record in courses completed, favorable recommendation by a Dean of the College and two professors, and a personal interview if possible. The Admissions Board will inform the applicant of its decision shortly after the deadline for application.

In order to qualify for the degree from Holy Cross a student must complete four semesters at the College, including two full semesters of senior year.

Under exceptional circumstances, transfer students may be considered for financial assistance from the College during their first year.

Admission of Special Students

Occasionally applicants who fulfill all the requirements for admission may, with the approval of the Registrar, choose special courses without following a complete degree program.

Expenses

College expenses vary with the individual, but at the present time, the minimum at Holy Cross would be about \$4,200 a year for boarding students, \$3,050 for off-campus students, and \$3,030 a year for day students. These figures include \$2,480 for tuition; \$1,130 for board and room, plus a \$50 health service fee where applicable; \$120 for textbooks and supplies; and \$420 for ordinary personal expenses. There is an application fee of fifteen dollars (\$15) which must be sent by check or postal money order, along with the pre-application card, directly to the Office of Admissions. The fee is non-refundable and not applied to any college bill. Candidates accepted for admission to Holy Cross are required to forward a non-refundable deposit of one hundred dollars (\$100), or two hundred dollars (\$200) for students granted substantial financial aid. This deposit must be submitted by May 1 and is applied to the first semester bill. Candidates accepted for admission under the Early Decision Program must submit their deposit in January.

Course of Studies

The College of the Holy Cross offers a curriculum leading to the Bachelor of Arts (A.B.) degree with majors in biology, chemistry, classics, economics, economics-accounting, English, fine arts; history, mathematics, modern languages and literatures (French, German, Italian, Russian, Spanish, Studies in European Literature), philosophy, physics, political science, psychology, sociology, and theology.

Requisite for graduation will be the successful completion of thirty-two semester courses, four in each semester. (A semester course is a course of one semester duration for which three credits are ordinarily granted.) The curriculum is divided into two parts: the Major and Free Electives.

A MAJOR consists of a *maximum* of fourteen semester courses. Some departments may require specific courses in allied fields.

FREE ELECTIVES may be chosen from allied or non-allied fields under the direction of the chairman of the department in which the student is to major.

Preparation for Medical or Dental School

For many years Holy Cross has maintained an excellent record in its successful preparation of students for entrance to medical and dental schools. In order to continue this record Holy Cross now offers what it believes is a most effective program for medical school preparation. A student may select any one of the 16 majors offered with the exception of Accounting and at the same time meet all requirements for admission to medical or dental school. If the applicant is offered admission as a student preparing for medical or dental school, the College will see to it that the proper science requirements are fulfilled as part of his regular course of studies. It is not necessary to select a science major. In fact, a student should select a major in which he is sincerely interested and for which he feels he is qualified. He should not select a major (e.g. biology, chemistry) because he feels that it is a requirement for entrance to medical or dental school. However, it is absolutely essential that any student seeking to qualify for medical or dental school have successfully completed a chemistry course in secondary school.

Many medical and dental schools recommend that students have completed one year of college mathematics. Such a course is REQUIRED for the following majors: biology, chemistry, economics, mathematics, physics, psychology. It is recommended to all philosophy majors.

Preparation for Teaching in Secondary Schools

Students who wish to prepare to teach in secondary school may elect courses in Education; the program, in practice, lays the basis for certification as a secondary school teacher in Massachusetts.

Worcester Consortium for Higher Education, Inc.

Admission to Holy Cross means availability to ten Consortium institutions. Students of the College may participate in special educational, cultural and social endeavors provided by the Consortium. The member institutions, all located in the Worcester area, organized in 1967 to broaden their activities through cooperative interchange. Specialized courses are available for credit away from the home institution under a system of cross-registration. Par-

ticipating institutions are Anna Maria College, Assumption College, Clark University, Holy Cross College, Worcester Polytechnic Institute, Worcester State College, Becker Junior College, Leicester Junior College, Quinsigamond Community College, and Worcester Junior College.

Many courses, from Afro-American Literature to Biomedical Engineering, are available to cross-registrants, and as Consortium activities multiply, the variety of offerings will increase. Special interests may be pursued under individual arrangements with other Consortium institutions.

In addition to the ten colleges, a group of associated organizations participate with the Consortium in providing further enrichment to college curricula: the Worcester Art Museum, the Worcester Foundation for Experimental Biology, the Worcester Historical Society, the American Antiquarian Society, the Craft Center, Old Sturbridge Village, the Worcester Science Center, the University of Massachusetts Medical School.

The Worcester Art Museum and the Craft Center provide instruction in the Arts. The Museum offers a degree program in conjunction with Clark University. The American Antiquarian Society houses one of the world's finest collections of Americana published between the Colonial period and 1820. The entire collection extends to 1875. The Worcester Foundation for Experimental Biology, which has a staff of nearly 100 science researchers, provides a research facility and staff specialties in the biological sciences. The Worcester Historical Society contains documents and memorabilia related to the founding and development of Worcester. The UMass Medical School, open in September 1970, offers graduate programs in the sciences and development of para-medical programs. The Science Center operates a large nature preserve, offers classes and exhibits, and will have a planetarium facility. Old Sturbridge Village ranks with Greenfield Village and Williamsburg as a living collection of American Life and Arts. Opportunities exist for employment and advanced degree study in this aspect of American museum work.

The Consortium's involvement with the Worcester community provides possibilities for collective and individual student activism. A tutorial program using college volunteers helps under-achieving elementary and secondary school students. A regional training Center for Community School personnel is planned. The Hispanic Aid Project is considering the problems of Spanish speaking immigrants and their children. Model Cities and the Chamber of Commerce Research group have Consortium representation. The Consortium considers community services and continuing education two of its most important functions.

The Public Relations officers of the Consortium institutions have produced a radio series among their other activities. The series is now on tape

and is being broadcast in different sections of the country. TV programs are being presented.

As faculty and students explore new ways to utilize their talents, drawing upon Consortium resources, new programs and arrangements will be created. The flexibilities built into the spirit of the Consortium favor its expansion and growth. The Worcester educational-cultural institutions creating new learning and service ventures will surely continue to provide a fertile experience for students and faculty. Students at Holy Cross are in effect registered at the "University of Worcester" which serves 15,000 Worcester area college students.

Special Studies Program

The Special Studies Program offers the unusually capable student maximum occasion to involve himself, with other students of his age and caliber, in the investigation and interchange of new and fresh ideas, as well as in the analysis and appreciation of the old. The vitality of his intellectual experience depends upon his eagerness in grasping the opportunities granted him.

Independent research, tutorial work with faculty members, and participation in seminars are the means by which the Honors student may exercise his potential and, with the direction of his professors and the Director of Special Studies, reach that high level of maturity, responsibility, and intellectual capability for which the Program of Special Studies exists.

The Program is open to students in all fields of academic study and has two divisions: Freshman Studies, and the Honors Program which encompasses the sophomore, junior, and senior years. Although both programs are under the Committee on Special Studies, the two are separate, and inclusion in the freshman seminars and special projects does not guarantee the student admission to the Honors Program. At the same time, participation in the Freshman Studies Program is not a requisite for Honors candidacy.

Freshman Studies

The Freshman Studies Program for the promising student aims toward further articulation of advanced high school work with study on the collegiate level. It provides for advanced placement, special sectioning, and freshman seminars. It is open to students whose background and ability warrant special attention in the planning of their curriculum. The degree of advanced work possible for each student is determined by his special qualities and the requisite background demanded by the various academic disciplines.

The Office of Special Studies

Director: Mrs. Phyllis Keller, Ph.D.

Associate Director: Robert F. Healey, S.J., Ph.D.

Associate Director: David J. O'Brien, Ph.D.

The Office of Special Studies is responsible for the following programs: Freshman Seminars, the Honors Program, The Center for Experimental Studies, and the Fenwick Scholars Program.

Freshman Seminars

Seminars of approximately ten students are offered each year by several departments. These seminars take the place of freshman courses in the areas concerned and are best suited to students whose high school work has been on an advanced or honors level. Information on the seminars available and directions for submitting an application are sent to all freshmen during the summer and students are free to apply for any seminar or seminars for which they feel qualified. In 1970-1971, students participated in ten seminars.

Honors Program

The Honors Program begins in sophomore year and extends through the senior year. Admission to the Program is initiated through application during the second semester of freshman year. Each student's candidacy is evaluated in the light of his freshman academic performance, faculty recommendations, and individual interviews. Successful candidates are notified of their admission before the end of the second semester of freshman year. In exceptional cases, applications for admission to the program may also be submitted by second semester sophomores.

Those students who are accepted participate in the Program for the remaining undergraduate years if their work continues to be of high quality. Many departments offer special opportunities for Honor Students: seminars, tutorials, research programs or independent study. Students in the Honors Program may register early for the courses and seminars of their choice. With the approval of the Committee on Special Studies they may be admitted to advanced work without having met the usual prerequisites.

The Center for Experimental Studies

The Center, constituted by vote of the faculty-student assembly in the spring of 1971, is intended to provide for Holy Cross students new and

additional ways to learn and to strive for academic excellence. Admission to the Center may be requested by all students except freshmen and applications will be judged taking into account the student's motivation, his preparation for the work he wishes to undertake, and the soundness of his plans. The Center provides each year a series of interdepartmental courses, a modest exchange program with selected colleges and universities and a series of field work-study opportunities in such areas as politics and government (municipal, state, and national), social welfare, ecology and conservation, health and the arts. In addition, a student may design his own field work-study project or a total program leading to the degree. Such plans must be submitted to the Committee on Special Studies for approval. Applications for admission to the Center will be available in April and November of each year for the following term. In most cases, students will limit their participation in the work of the Center to the equivalent of one course each semester.

The Fenwick Scholars Program

The Fenwick Scholars Program, begun in 1966, is open only to seniors in the Honors Program on nomination of their departments. From those nominated, five scholars are selected by the Committee on Special Studies; one from each of the three areas of Humanities, Social Sciences and Natural Sciences and the other two at large. As a Fenwick Scholar a student is free to design, with his advisor, the academic program which he believes will complete his undergraduate education in the most profitable way, Scholars are free to take courses or not, to do independent study, or to undertake a combination of courses and independent study. In choosing scholars, the Committee on Special Studies seeks those students who will put this unusual opportunity to best use. Usually the Fenwick Scholars Program culminates in the presentation of a major piece of work: a scholarly essay, a group of experiments or a demonstration of substantial accomplishment in the creative arts.

Student Personnel Services

The offices of the Dean of Students, Campus Center, Center for Human Relations, College Chaplain, Counseling Center, Financial Aids, Placement and Student Health Services all go to make up the area of Student Personnel Services. Each of these departments offers to the student a multi-service program which provides guidance and assistance in helping the student in meeting both his long range and short range needs.

Student Services

The Student Health Service Program and the Student Accident and Sickness Insurance are especially designed to provide broad medical coverage and to relieve parents of possible financial strain in meeting this type of unanticipated expense.

Student Health Service Program

The College's Infirmary provides board, room, professional nursing care 24 hours a day, medicines prescribed by our staff, whirlpool treatments for non-athletic students as ordered by our physician, bandages, dressings, etc., for all boarding and off-campus resident students. All boarding and off-campus resident students are required to enroll in the Health Service Program: the fee is \$50.00 per year. Beginning with the third day of confinement, off-campus residence students will incur a nominal charge (\$5.00 per day) for room and board.

Student Accident and Sickness Insurance

Expenses incurred as a result of any accident or sickness are reimbursed under a liberal schedule. Reimbursement up to \$2,750.00 is possible under the Accident Benefit Schedule while the Sickness Benefit Schedule compensates for hospital, surgical, nursing, physician's costs, etc. Charges for the Student Accident and Sickness Insurance (\$30.00 per year) together with complete information about this service will be included with the first semester bill.

Residence Hall Accommodations

Because Holy Cross is a residential college, residence hall life is a significant factor in the student's education. Freshman resident houses are administered by a corps of Resident Assistants who are outstanding juniors and seniors selected for their leadership ability. Upper classmen houses are administered by an exceptional senior who works with the elected leaders of the house toward the development of community. Resident chaplains live on many resident corridors and offer an opportunity for counsel and advice. Social, educational and other programs are sponsored by individual residence halls throughout the year.

The residence halls of Holy Cross have accommodations for nearly 1,900 students. Most rooms are designed for two students. Each student room is provided with the essential articles of furniture, such as beds, chairs, desks, lamps, locker, mattresses, pillows, telephones. Students contract privately with a linen service company recommended by the College which will

supply and launder two sheets, one pillow case, two bath towels and two hand towels each week of the school year.

Dinand Library

The library houses a collection of over 282,000 volumes and currently subscribes to over 1,550 journals in all fields of endeavor. Audio-visual resources consist of newspapers, journals, and books on microfilm, microcard, and microfiche. *The New York Times* holdings run from 1851 to the present. The student is afforded ample study areas in the Main Reading Room, the Stack area, the Periodical, Browsing, Reserve Book and special study rooms. The Main Reading Room contains the card catalogue of the library's holdings, the circulation desk, an information desk, major reference works for the various academic disciplines, and suitable accommodations for reading and study.

The students are instructed in the use of the library and made familiar with both the instruments and methods of research. The Periodical room affords a pleasant study atmosphere amidst a multitude of periodicals and significant periodical indices. The Browsing Room offers an air of comfort and relaxation where the student may smoke while studying. It houses our fine arts collection. The second floor of the library offers our microfilm resources and equipment, a music listening room, rare book rooms and study areas.

The library boasts of many special collections consisting of incunabula (books printed prior to 1500), early 16th and 17th century Jesuitana, Americana (books published in America prior to 1820), manuscript collections, Louise Imogen Guiney Memorial Collection, David I. Walsh Collection and many others.

The Library holds memberships in the following organizations: American Library Association, Association of College and Research Libraries, Catholic Library Association, Massachusetts Library Association, Music Library Association, New England Library Association.

Graduate Studies Office

Most students now continue their studies beyond college. Professional studies in law, medicine and dentistry, all the varied areas of academic graduate study, programs in business administration, education and newer fields like urban affairs attract more students each year. The Graduate Studies Office exists to acquaint our students with these innumerable opportunities, to help them make intelligent choices in their educational plans and to aid them in their search for university admission and scholarship aid.

In O'Kane 458 a special library has been assembled to provide complete information about graduate and professional studies. Catalogs of all American graduate programs and many foreign institutes may be read there in private. A large selection of excellent guides to post-baccalaureate study is available.

The Advisor for Graduate Studies welcomes students to visit him individually when they are formulating their study plans. Moreover, all nominations for national competitive fellowships—the Rhodes Scholarship, the Danforth National Fellowship, the Woodrow Wilson Foundation Fellowship, the Marshall Scholarship, and the Fulbright Awards—are made through his office. This college has an excellent record of placing its graduates and aiding them achieve distinction and awards in fellowship competitions. More than 60% of our recent classes began some form of graduate or professional study immediately after college, while an additional 10% or more returned to some form of graduate or professional study after fulfilling military or other obligations. In recent years Holy Cross graduates have included more than thirty Woodrow Wilson Fellows as well as numerous Danforth, Fulbright, Marshall, Root-Tilden and National Defense Fellows. Since 1966, the College has had three recipients of Rhodes Scholarships.

The Center for Human Relations

The Center for Human Relations is a student-oriented service which focuses upon interpreting and making the College community aware of selected student concerns. The Center strives to foster a more meaningful communication among student groups, faculty and staff members and the greater community, in helping each assume a responsible role in the liberal arts experience. By supporting varied and creative dimensions of student motivated endeavors, the Center strives to nurture interactions that would enrich established human qualities. The Center is extremely conscious of and seeks to help those campus groups which have yet to emerge into the active mainstream of campus recognition and participation.

Counseling Center

The purpose of the Counseling Center is to help students work more effectively and to achieve academic, personal and vocational goals.

The Counseling Center offers the following programs:

FRESHMAN TESTING PROGRAM: All entering freshman participate in a testing program. The purpose of the testing program is to determine each student's academic potential and to assess his proficiency in the learning skills which are considered important for success in studies.

READING IMPROVEMENT AND STUDY SKILLS PROGRAM: Since the College realizes that even students of high intellectual promise may not do well in their studies because of poor reading or study skills, the Counseling Center offers special courses in these areas during each semester. Through instruction and intensive practice in these courses, the student acquires effective study skills and the ability to read rapidly with a high degree of comprehension.

EDUCATIONAL AND VOCATIONAL GUIDANCE: Staff members are available to help students achieve their educational and vocational goals. The Counseling Center also maintains an extensive library of occupational information describing the vocational opportunities available to college graduates.

PERSONAL COUNSELING: Counseling to help you resolve personal problems which might interfere with your ability to succeed at Holy Cross or affect your personal well-being is offered at the Center. Your discussions with a staff member will be completely confidential.

HUMAN DEVELOPMENT PROGRAMS: During the academic year, the Counseling Center sponsors a number of lectures and open discussions in a continuing human development series. The series serves to provide students with the opportunity to acquire information to satisfy various common needs and concerns.

The Counseling Center is located in Alumni 64. Students interested in the services provided may make appointments Monday through Friday, 9 a.m. to 4:45 p.m.

Placement Office

This Office offers career counseling for all Holy Cross Seniors and alumni and in particular for those interested in careers in business and government.

Campus interviews are arranged with personnel officers of business and industrial firms and representatives of governmental agencies.

For those Seniors applying to graduate schools of business, interviews are arranged with graduate school representatives in the Fall.

Undergraduates are urged to utilize the facilities of the Placement Office, particularly those interested in careers in government or business. Summer job counseling is also provided.

A series of career guidance talks and communications are offered for the Seniors, starting in late September. Alumni and other business and professional leaders speak informally of career opportunities and aid in the art of interviewing.

Henry M. Hogan Campus Center

The Henry M. Hogan Campus Center offers a wide variety of services, and houses numerous facilities, providing a broad social, cultural, educational and recreational program for the college community.

The Campus Center includes meeting rooms, lounges, bowling lanes, student organization and administrative offices, the college bookstore, a cafeteria and snackbar, private dining rooms, ballroom and party rooms, an information center, barber shop, duplicating center, and record and art print libraries. In addition, substantial day student facilities are provided to accommodate the needs of non-resident students.

The Campus Center Board of Directors represents all members of the college—students, faculty, and staff—and oversees the activity of the Campus Center, in coordination with the Campus Center staff.

In its program, the Campus Center is committed to continuing education and to complementing formal instruction with meaningful leisure time activities. Participation in and the development of mature appreciation for social, cultural, intellectual and recreational activities for the entire college community is the primary goal of the Campus Center.

Cultural Events

Each year the educational program of the college is enriched by fall and spring programs of lectures, theatrical productions, concerts, and classic films series. Eminent artists, distinguished men of letters and science, political and social scientists are invited to the campus for formal and informal presentations. In addition to the campus program, the city of Worcester offers many cultural opportunities to the students at Holy Cross. Several fine museums are located in the city, including the famous Worcester Art Museum, the John W. Higgins Armory Museum and the Worcester Science Museums, as well as the Library of the American Antiquarian Society. The newly-constructed Worcester Public Library is also available to Holy Cross students. Old Sturbridge Village, a re-creation of a colonial village, is located nearby. The Annual Worcester Music Festival is a popular event for Holy Cross students.

Reserve Officers' Training Program

All students are eligible to apply for the ROTC programs of the Air Force and Navy. The Air Force program leads to a commission in the Air Force Reserve and prepares for specific duties in the Regular Air Force, the Air Force Reserve and the Air National Guard Units. The Naval

ROTC program prepares qualified officers for the Navy and Marine Corps, the Naval Reserve and the Marine Corps Reserve.

Detailed information about both ROTC programs may be found elsewhere in this catalog under "Courses of Instruction."

College Organizations

Student Government

The Student Government is composed of elected representatives and officers of the student body whose purpose is to act as the official representative of the student body; to receive and express student opinion; and to advance the best interests of the student body with the administration and faculty and with other educational institutions and associations.

Honor Societies

ALPHA KAPPA DELTA

Alpha Kappa Delta is the national sociology honor society. It is an organization of students and faculty. The purpose is to promote an interest in sociology and in research and publication in this field. Students are selected because of academic distinction in sociology and the total range of their studies. Alpha Kappa Delta was founded in 1920. The Holy Cross chapter was established in 1969.

ALPHA SIGMA NU

Alpha Sigma Nu is a national honor society with chapters in Jesuit Colleges and Universities throughout the United States. It is a society organized to honor students who have distinguished themselves in scholarship, service and loyalty to their College, to promote the interests of the College, to foster all praiseworthy student activities, to unite those alumni who must fully understand and appreciate the ideals of Jesuit Education and who seek to realize those ideals in themselves and others.

DELTA EPSILON SIGMA

Delta Epsilon Sigma, a national scholastic honor society for students and graduates of Catholic colleges and universities, was first organized in April 1939, and its constitution was adopted in March, 1940. It is constituted to give recognition and encouragement to high scholarship among students of Catholic colleges and universities. Student membership is drawn from ten percent of the senior class with scholastic honor rating.

ETA SIGMA PHI

Eta Sigma Phi, the national honor society in the classics, selects as members students who distinguish themselves in the study of the classical languages. Delta Lambda chapter was established at Holy Cross in 1964.

OMICRON DELTA EPSILON

The Holy Cross chapter of Omicron Delta Epsilon, the national society in economics, selects as members students who have distinguished themselves in the study of economics. The object of the society is the encouragement of study, research and publication on economic questions. The local chapter was established in 1967.

PHI ALPHA THETA

Phi Alpha Theta, the national honor society in history, is a professional society, the objective of which is the promotion of the study of history by the encouragement of research, good teaching, publication, and the exchange of learning and thought among historians. Kappa Omega chapter was established on campus in the spring of 1966.

PHI SIGMA IOTA

Phi Sigma Iota is the national Romance Language honor society. Its objective is to recognize outstanding ability and attainment in Romance languages and literatures, the stimulation of advanced work and individual research in this field, and the promotion of a sentiment of amity between our nation and the nations using these languages. Sigma Psi, the Holy Cross Chapter, was established in March 1971.

PI MU EPSILON

Pi Mu Epsilon, the national honor society in mathematics, promotes scholarly activity in mathematics among students in academic institutions by electing members on an honorary basis according to their proficiency in mathematics and by engaging in activities designed to promote the mathematical and scholarly development of its members. Chapters are chartered only in institutions of university grade as indicated by the high quality of its faculty and academic standards in all liberal arts departments, particularly in mathematics. Massachusetts Beta chapter was established on campus in the spring of 1967.

PSI CHI

Psi Chi, the national honor society in psychology, was established on cam-

pus in the spring of 1965. As an affiliate of the American Psychological Association, it seeks to nurture a creative atmosphere in psychology.

SIGMA PI SIGMA

Sigma Pi Sigma, the national physics honor society, seeks to recognize high scholarship in physics. Students elected to membership must attain high standards of general scholarship, outstanding achievement in physics, and show promise of professional merit. The local chapter was established in 1970.

Professional and Departmental Organizations

BIOLOGY SOCIETY

The Biology Society, composed of students majoring in biology, provides its members with the opportunity to study more intensively and critically some of the problems of that science.

BLAKELY LABOR ACADEMY

The Blakely Labor Academy, open to students majoring in economics, was organized in 1935 to encourage the study of Catholic principles applicable to the labor problems in the United States.

CROSS AND CRUCIBLE CHEMISTS' CLUB

This club is devoted to the advancement of chemistry and the development of social and professional relations among its members. The club was founded in 1927 and is open to all undergraduate students of chemistry. The club is a chapter of Student Affiliates of the American Chemical Society.

ECONOMICS CLUB

The Economics Club hopes to instill in its members both the willingness to confront the complexities of modern economic problems and the ability to pose and weigh alternatives to the questions of economic policy. At its meetings members present papers on topics of interest to the group.

FENWICK THEATRE COMPANY

The Fenwick Theatre Company is composed of those students who participate in the production of the annual season of plays in Fenwick Theatre,

under the direction of the faculty of the Division of Theatre Art. Auditions for roles and interviews for staff positions are open to all students of the College on a competitive basis. See page 000, (Division of Theatre Art) for additional details.

HISTORY ACADEMY

The History Academy is open to all students interested in history. The meetings of the Academy provide an opportunity for student discussion of topics of interest to the members, for the presentation and discussion of student research papers, and for discussion of special topics with invited historians from the Holy Cross faculty and from neighboring institutions.

INTERNATIONAL RELATIONS CLUB

The club seeks to provide a campus forum for serious discussion of current international issues. The club meets regularly to hold panels and open discussions, to view films, and occasionally to hear guest speakers. All students are invited to attend and to contribute to the discussions.

ITALIAN CLUB

It is the purpose of the Italian Club to foster and promote an interest in the Italian language, culture, and literature among all students. The Club was founded in 1967.

MATHEMATICS CLUB

The Mathematics Club, established in 1946, meets regularly to discuss topics in advanced undergraduate mathematics. The purpose of the club is to promote the study of pure and applied mathematics.

PHYSICS SOCIETY

The Physics Society, composed of students interested in physics, has for its purpose the development of deeper and wider interest in that subject. Speakers from the faculty, student body and industry discuss aspects of pure physics and its applications.

ST. THOMAS MORE SOCIETY

The St. Thomas More Society is open to all who are interested in a future career in law. Through lectures and discussions by lawyers, professors and deans of law schools, students gain both a theoretical and practical knowledge of the profession.

SEMPER FIDELIS SOCIETY

The Semper Fidelis Society is a national association dedicated to the stimulation and protection of the high traditions of the U.S. Marine Corps. It is composed of selected cadets enrolled in a program leading to a com-

mission as an officer in the Marine Corps. The Alpha Gamma chapter at Holy Cross meets regularly with distinguished guest speakers and holds an annual field trip to a Marine installation.

SOCIOLOGY CLUB

The Sociology Club seeks to stimulate in its members a greater understanding of the sociological dimensions of modern society, its issues and problems.

TRIDENT SOCIETY

The purpose of the Trident Society is to instill a greater esprit de corps among the NROTC midshipmen in both the Navy and their own unit by engendering a spirit of camaraderie through social and informational activities. A voluntary organization open to all midshipmen, the society gives them social and professional opportunities not available through individual action.

Student Publications and Communications

THE CRUSADER

The Crusader, the newspaper of the College, has been published since 1924. Its purpose is twofold: to train interested students in the art of journalism; and to secure a firmer bond among undergraduates and alumni through reporting and commenting upon the important events on and beyond the Hill.

PURPLE PATCHER PUBLICATIONS

Students under the direction of a selected Editor-in-Chief, Business Manager, and Editor of Photography form a student publication firm responsible for *The Purple Patcher* (the Holy Cross yearbook) and *The Purple* (student literary magazine). The firm also assists in the publication of the Admissions book, the telephone directory and other small brochures.

THE PURPLE

The Purple is a magazine written, edited and published by the students of the College to provide a showcase for student writing, both critical and creative.

TODAY

Today endeavors to provide "instant" campus communication by publishing four times weekly. It attempts to acquaint various groups on campus with the interests and activities of other groups and also to function as an open forum for opinion.

WCHC

The campus radio station, WCHC, which began a formal broadcasting schedule on December 6, 1948 is operated entirely by student members. It provides a talent outlet and radio experience for students in its various departments: station management, programming, production, announcing, sports and news, music, sales and technical work, among others. WCHC, a CBS network station by special affiliation, has often provided local commercial stations with personnel. Many ex-staff members now have permanent careers in broadcasting.

Departmental Publications

THE CROSS PRODUCT

The Cross Product is published twice a year by members of the Holy Cross Physics Society. It serves as a medium for the publication of student research in physics and as a forum for discussion of current topics in physics.

THE CROSS AND CRUCIBLE

The Cross and Crucible is normally published four times a year by the Department of Chemistry. It provides a medium of scientific expression for chemistry students; it records work of a progressive nature done in the department; it supplements the textbooks with timely articles of general interest to the student of chemistry; and it records the abstracts of departmental seminars and theses.

Religious Organizations

COLLEGE CHOIR

The College Choir was organized to assist at chapel services and to promote devotion by acquainting students with the treasury of Church music.

CONFRATERNITY OF CHRISTIAN DOCTRINE

The Confraternity of Christian Doctrine is a student teachers unit. The purpose of the Confraternity is "to bring Christ to youth and to bring youth to Christ." Holy Cross students conduct religious doctrine classes for grammar school and high school students.

KNIGHTS OF COLUMBUS

The Crusader Council, No. 2706, was founded in March, 1929. Since that date it has been quite active. At present there are over 500 members, the greater number of whom have already graduated.

ST. JOHN BERCHMANS SANCTUARY SOCIETY

The St. John Berchmans Sanctuary Society has for its object the fostering of a special devotion in the assisting at the altar in all religious ceremonies.

SODALITY

As a means of engendering filial love and inculcating virtue in the students, the Sodality of Our Lady was established in 1844 under the title of the Immaculate Conception and with the patronage of St. Aloysius Gonzaga. The Sodality has for its object the realization of the fullness of the Christ-life through Mary, by means of the solemn consecration of its members, and their active dedication to the "way of life" of their Christian Baptism.

VOLUNTEER TEACHERS PROGRAM

Originally named the Lay Missionary Program, the Volunteer Teachers Program serves as the vehicle for the recruitment and preparation of teachers for depressed areas in the United States, and for Iraq and Jamaica. Service is for a period of from one to two years upon graduation with expenses paid. Interested students undergo a program of orientation, interviews, information and preparation during senior year in a series of weekly meetings.

Other Organizations

ART CLUB

The Art Club, founded in 1969, seeks to provide Holy Cross students with the opportunity of finding artistic expression in various mediums outside of the formal studio course. The club is open to everyone and experience is not necessary.

B.J.F. DEBATING SOCIETY

Organized in 1846 in honor of the founder of Holy Cross College, the Most Reverend Benedict Joseph Fenwick, S.J., this society in the one hundred and twenty-three years of its existence has a tradition of excellence in public speaking. Besides its intercollegiate debating activity, the B.J.F. sponsors a number of student lectures, an annual campus oratorical contest, and an annual high school debate tournament.

BLACK STUDENT UNION

The Black Student Union is concerned with the Black student and his relation to the campus on which he functions. One of the organization's principal objectives is the broadening of the Black student's awareness of himself, his history and culture, and of his worth and potential for the future.

BRASS CHOIR

The brass choir includes a small number of musicians who perform in small concerts and chamber recitals. The instrumentation is varied, and the music is challenging for qualified brass players.

CAMPUS CENTER BOARD OF DIRECTORS

The Board of Directors provides an activities program of a social, cultural, intellectual, and recreational nature for the benefit of all members of the College. Membership is limited to nine students and one member of the faculty.

CHEERLEADERS

The cheerleaders are selected and function under the guidance of the athletic department. They lead college cheers and songs at appropriate collegiate activities.

CHESS CLUB

The Chess Club is responsible for the promotion of chess instructions, matches, and tournaments within the organization and with teams representing area schools and clubs.

CHRISTIAN ENCOUNTER

This lecture series presents the student with the modern predicament. Noted intellectuals offer their resolution of the confrontation of the timeless principles of Christianity and contemporary living.

CONCERT BAND

The concert band affords talented students the opportunity to develop their musical abilities and enjoy playing with a concert organization. A wide range of music is performed, from classical to contemporary. The band presents a number of concerts for the College and the community.

CROSS AND SCROLL SOCIETY

The Cross and Scroll Society, originally formed as the Hellenic Academy for the promotion of interest in classical studies, is the student organization whose purpose it is to organize, arrange, and present the College's lecture series each year. The Society has brought to the campus many distinguished speakers from the areas of art, literature, and general culture.

CRUSADER DANCE BAND

The Crusaders present the modern, big band sound for dances and many other social functions. The Crosstones are a smaller combo of the Crusaders. Both groups play on campus and off, with members of the dance band sharing in the income.

CRUSADER FLYING CLUB OF WORCESTER, INC.

The Flying Club is a corporation of students established in 1966 to promote the flying of private aircraft for sport and recreation. The club owns a four-place airplane, based at Worcester Airport, and offers members instruction for a private pilot's license at reduced rates.

1843 CLUB

The 1843 Club is one of the larger organizations on the campus. Its purpose is to develop a strong bond of friendship between its members and the members of other colleges by means of social activities.

EMERALD SHIELD

A common interest in satire and the unusual provides the basis for the activities of the Emerald Shield.

GEOGRAPHICAL CLUBS

Membership in the various geographical clubs offers an opportunity for students from the same metropolitan areas to participate in social and service activities.

GLEE CLUB

Selected students, under the direction of the Vocal Music Director, present programs on campus and as representatives of the College in various community and alumni events.

GUN CLUB

The Holy Cross Gun Club is dedicated to the proper and safe use of firearms. The club wishes to promote safety and adequate knowledge of weapons for its members and the campus community. As a result, it holds functions to provide the opportunity to learn and practice such skills mainly through hunting trips, firearms competition and special classes in weapons handling and safety.

INTRAMURALS

The Intramural athletics program is one of the most active programs on the campus. Organized leagues are maintained in such sports as football, basketball, softball, tennis, golf, track, and bowling.

JAMES MADISON SOCIETY

The James Madison Society, founded to "educate for liberty and act for its preservation," offers a series of lectures and seminars on topical subjects.

MARCHING BAND

The marching band is the musical unit that performs at major athletic events of the College, including all home football and basketball games,

and a number of away games. The band creates and performs original marching and musical shows which are presented at the games. Each year, the band takes two or three weekend trips, combining both musical and social activities.

MARRIED STUDENTS ASSOCIATION

The M.S.A. was established to serve a dual purpose. First, to act as a social organization serving the needs of the married students and their wives. Secondly, to function as a service organization dedicated to assisting the married students in their adjustment to the Worcester community. Membership in the M.S.A. is open to any married student of the College and his wife.

POLITICAL CLUBS

A concern for partisan political activities at the local, state, and national levels sustains the activities of the Young Democrats and Young Republicans.

PURPLE KEY

It is the purpose of the Purple Key to foster loyalty and enthusiasm for the activities and goals of the College. Meaningful school spirit is encouraged by the membership of selected students.

RUGBY CLUB

The Rugby Club offers a program of instruction and competition in the international sport of rugby football. The Club has represented the College in intercollegiate competition and national tournaments.

SAILING

A member of the New England Intercollegiate Sailing Association, sailing provides competitive and instructional racing during the spring and fall seasons.

SCOPE (SCHOOL AND COLLEGE OPPORTUNITY PROGRAMS IN EDUCATION)

A program run in conjunction with the Worcester School Department affords students the opportunity to work with high school students on a one-to-one basis. The program consists in tutoring in basic subjects and study skills students who have been tested and found to be under-achievers.

SKI CLUB

Founded 1970-71 school year. Available to all students. Club constructed

and operated the first ski slope on campus. Program of instruction, novice through racing available to all members.

SKI TEAM

As a minor sport team under the direction of the Athletic Association, the Ski Team participates in intercollegiate competition as a member of the New England Intercollegiate Ski Conference.

SQUASH CLUB

The Squash Club, founded in 1968, offers a program of instruction and interclub and intercollegiate competition in the Massachusetts Squash League.

THE WOODWIND CHOIR

The woodwind choir is a small group of talented woodwind players who present programs of music fitted especially for this unique combination of musical instruments.

Athletics

ATHLETIC ASSOCIATION

The object of the Athletic Association is to promote the athletic interests of the college, to discuss and determine matters of management pertaining to the welfare of collegiate and intercollegiate sports and to foster the basic principle of a sound mind in a sound body by offering a 15-sport program of athletic activity.

INTRAMURAL ATHLETICS

This most flourishing co-curricular activity brings the advantages of healthy and competitive indoor and outdoor sports to very many undergraduates through a year-long program of games and tournaments.

Athletic Staff

Vincent G. Dougherty, Ph.B., LL.B. *Director of Athletics*
Joseph W. McDonough, B.S. *Business Manager of Athletics*
Rev. John F. Devlin, S.J., M.A., S.T.L. *Chaplain*

Rev. Francis J. Hart, S.J., M.A. *Director of Intramurals*
Richard R. Lewis *Director of Sports Information*
Edward A. Doherty, B.S. *Coach of Football*
John Hickman, B.S. *Assistant Coach of Football*
Gayton Salvucci, B.A. *Assistant Coach of Football*
Curtis Gentry, B.A. *Assistant Coach of Football*
Francis P. Donaher, M.S. *Assistant Coach of Football*
John P. Whalen, M.A. *Coach of Baseball*
 Assistant Coach of Football
Philip O'Neil, B.S. *Assistant Coach of Baseball*
John P. Donohue, M.A. *Coach of Basketball*
Frank McArdle, B.A. *Assistant Coach of Basketball*
W. Harold O'Connor, Ph.B. *Coach of Track*
 Coach of Cross Country
James Kavanagh, B.A. *Assistant Coach of Track*
Gerald R. Anderson, A.B. *Coach of Golf*
Walter H. Kane *Coach of Hockey*
Robert Skinner, B.S. *Assistant Coach of Hockey*
Doctor S. Wylie, D.D.S. *Coach of Lacrosse*
Nicholas Sharry, A.B. *Coach of Tennis*
Paul Parenteau *Coach of Swimming*
John M. Foley, Jr., B.S. *Coach of Crew*
David Barnicle *Coach of Soccer*
John P. Scott *Trainer*
Joseph deMarco, M.D. *Physician*

Expenses and Financial Aid

Expenses

Tuition

All Classes

Board and Room

All Classes

Student Health Service Program

All Boarding and Off-Campus Students

Application Fee

A fee of \$15 (non-refundable) must accompany all applications for admission to the College.

Student Activity Fee assessed of all students in 1st semester

Acceptance Deposits

Candidates, usually notified of acceptance from January to April, are obliged to forward a non-refundable reservation deposit of \$100. For students accepted under the Early Decision Plan and for all Financial Aid Awardees the required deposit fee will be \$200. This fee must be submitted by May 15 and will not, under any circumstances, be refunded. The amount deposited will be credited toward payment of the first semester bill.

Room Deposits

All students who wish to reserve a room on campus during the next academic year, must signify their intent and pay a non-refundable room deposit of \$100 by May 15. This deposit will be credited at the rate of \$50 per semester toward room charges. Entering freshman who have paid a Reservation deposit of \$100 do not have to pay this deposit.

Audit: (Per Semester Hour PSH)	85
Clerical Charge: (Late payment of Semester fees)	10
Examination, Absentee: (\$5 per exam, but not to exceed a total of \$15)	5

Examination, Conditional: (Freshmen, first Semester only)	5
Extra Course Fee: (By Arrangement with Dean and Treasurer)	20
Graduation Fee: (Second Semester, senior year)	20
Late Registration Fee:	10
Program Schedule Change: (Include Section Change, Course Change, Add a Course, Withdrawal from Course)	5
Reading Clinic Fee:	30
Transcript:	1
I.D. Card: Freshmen & Juniors	2
Health Insurance (Optional)	30

Books and Personal Expenses

A fair estimate of the average personal and incidental expenses for the school year is \$400. Books and supplies vary in cost from \$100 to \$150 for the year.

Payment of Bills

Bills for one-half of each of these fees will be issued not later than two weeks prior to the opening of each semester, and are due and payable by the date indicated on each statement rendered. Payment is to be made by check or money order, payable to the COLLEGE OF THE HOLY CROSS, and sent to the Treasurer, College of the Holy Cross, Worcester, Massachusetts 01610.

Installment Payments

No provision is made for installment payment, whether monthly, quarterly, or otherwise, directly with the College. Parents who wish to make such arrangements should do so with a bank or other commercial firm that handles such financing.

EFI Fund Management Corp., 36 S. Wabash, Room 1000, Chicago, Illinois 60603, Funds for Education, Inc., 319 Lincoln Street, Manchester, New Hampshire 03103, and Tuition Plan, Inc., 575 Madison Avenue, New York, N.Y., 10022 are three of the many firms which write contracts for installment payments.

Many states have a bank guarantee program for long-term, low-interest education loans. Certain religious, labor and service organizations, as well as some companies also have loan programs available to members or employees.

Parents should investigate and evaluate the different programs before

committing themselves to a particular repayment schedule. Whenever required, the College will be happy to cooperate with parents in arranging for any loan program that will make it easier for parents to meet the College's own requirements that semester fees must be paid in advance of registration.

Refunds of Tuition, Board and Room

During the first five weeks of each semester, there will be a proportional refund of tuition; after five weeks there will be no refund.

Once a student has contracted for and occupied a room on campus there will be no refund of the semester fee.

During the semester there will be a proportional refund of board charges for students who withdraw or move off campus.

Telephones

The College provides a telephone in each student room. No fee is charged and the telephone may be used both for intra-campus calls and, on an unlimited no-fee basis, for off-campus calls to the areas listed in the Worcester Directory. Toll calls are billed directly to the student at cost.

Toll Calls

Toll calls are the personal responsibility for the student(s). Toll calls made from a student telephone and reverse-charge calls received, will be automatically billed by the Telephone Company to the student telephone involved. Such charges must be paid to the Telephone Company either at the sub-office in the Treasurer's Office or at any other Bell Telephone Office.

Non-Payment of Telephone Bills

The College assumes no responsibility for supervising collection of telephone bills. The Telephone Company has informed the College that if such bills are not paid by the next billing date after the charge is made, service will be discontinued. If payment is not made within one week after discontinuance of service, the Company will remove the instrument. Re-installation will not be permitted until all charges are paid and a re-installation fee collected in advance.

Financial Aid

Freshmen

In order that the opportunity for an education at Holy Cross College may be within the reach of as many qualified students as possible, the College

offers scholarships, loans, and employment, either singly or in combination, to those who could not otherwise afford such an education. Awards are based on academic promise, high qualities of character and citizenship, and demonstrated financial need. This past year over 40 percent of the freshman class were receiving some form of College Administered financial assistance.

To apply for aid an incoming student need only indicate on his application for admission that he would like to be considered for financial assistance. There is space provided for this purpose on the second page of the application form. The only other requirement would be submitting the Parents' Confidential Statement to the College Scholarship Service, preferably before January 1. This form (P.C.S.) is available at the applicant's secondary school and is used to determine the amount of assistance a student will need to attend the College for one year. Aid candidates are usually notified of financial awards from the College at the same time that they are informed of the decision on their application for admission. Students can expect to receive notification in March or April after all the necessary credentials have been received and evaluated.

Upperclassmen

Holy Cross students who receive college administered financial assistance must file a new P.C.S. as well as a Holy Cross Financial Aid Application each year. Forms are available after January 1 from the Financial Aid Office. Students who wish to apply for financial assistance for the first time should follow this same procedure and indicate that they are first time applicants. The Holy Cross application must be on file with the Financial Aid Office and the Parents' Confidential Statement forwarded to Princeton before March 15 to assure sufficient time for processing by the July award notification date.

Scholarships

Last year, over two-hundred entering freshmen were awarded Holy Cross scholarships with stipends ranging from \$200 to as much as \$3,000 depending upon the student's financial need. Each applicant is considered for all awards for which he may be eligible, including many endowed* and restricted scholarships, as well as several Holy Cross Alumni Club grants. In general, scholarships and/or additional assistance will be renewed each year provided the student continues to demonstrate need for such assistance. Stipends, however, may be adjusted where the family resources decrease or increase significantly. There are a limited number of honorary

* A list of endowed scholarships begins on page 201.

scholarships awarded in recognition of scholastic excellence and where financial need is not a factor.

In addition to awards made from College funds, many students will receive scholarship assistance from corporations, foundations, civic groups, parent and school associations, and service clubs. Every student who is interested in helping himself financially should be alert for information about any outside scholarship aid for which he must apply independently.

Loans

1. Federal Guaranteed Loan Program: Under the terms of the Higher Education Act of 1965, students may borrow funds for college expenses from banks or other incorporated state lending agencies entirely apart from the College. It is recommended that the student borrower apply at a home town bank, preferably one with which he and his parents do their banking. The amount loaned to a student may vary from state to state. The rate of interest is 7% and if a student borrower's adjusted family income is under \$15,000 a year, the Federal Government will pay the bank interest on the loan while the student is in college. Principal repayment may be deferred while the student continues his studies, or while he serves in the Peace Corps or in the Armed Services. Incoming freshmen are urged to investigate this program at their local banks.

2. National Defense Student Loan Program: Holy Cross College administers loans to undergraduates from funds under Title II of the National Defense Education Act of 1958. Unless deferred or cancelled in accordance with the terms of the act, loans made under the N.D.S.L.P. are due and payable ten months after graduation or upon leaving college, and must be repaid within a ten-year period from that date. An interest rate of 3% is charged, when the loan becomes due. The maximum loan in any one year is \$1,000. and the total loan may be \$10,000. throughout a student's education in college and graduate school.

Due to the limited amount of funds appropriated by the Congress, priority for loans under this program will be extended to students from states or areas in which loans made under the Federal Guaranteed Student Loan Program are not easily available. Ordinarily, before approving a National Defense Student Loan, the College will require evidence that the student's application for a Guaranteed Loan has been refused.

Employment

In addition to scholarships and loans, employment is available to students as part of the financial aid package. Campus jobs as well as the Federal Work-Study Program provide the opportunity to earn between \$200. and

\$600 per academic year. No entering Freshman should count on earning any substantial sum through work unless he has a definite promise of employment before the opening of College in September. Wages are based on an hourly rate and are paid directly to the student. There are miscellaneous jobs in the Worcester Community and the Financial Aid Office will serve as a "clearing house" for such opportunities.

The Financial Aid Committee expects families to give assistance to the extent they can, both from income and from assets, and the Committee follows quite closely in its calculations the policies and practices developed by the College Scholarship Service. The Committee understands that the actual amount of help offered at any income level will vary widely according to special circumstances—savings, investments, medical bills, debts, educational costs of children in college, and other obligations.

For additional information on financial assistance, address inquiries to:

Office of Financial Aid
Fenwick Hall
College of the Holy Cross
Worcester, Massachusetts 01610

A normal program consists of four semester courses in each term. For good reason, a student may take a fifth course. However, registration for a fifth course will not be allowed until all students have chosen their four courses. Honors students constitute an exception to this policy. They may register for a fifth course at the time of regular registration.

Failure to comply with the procedures specified by the Registrar for registration, change of course, and withdrawal from a course, will result in either denial of credit or deficiency in the course.

Degree Requirements

The College offers two degrees in course: the Bachelor of Arts (A.B.) and the Master of Science (M.S.) in Chemistry.

The Bachelor of Arts degree includes up to a maximum of 14 courses in a major field, and the remainder in free electives, to a total of 32 courses. More details are found on p. 12, and in later sections, under the several departments offering majors. All majors qualify for the Bachelor of Arts degree.

Academic Policies

General

The college year is constituted of two semesters of sixteen weeks each.

College curricular requirements are stated in terms of semester courses, but each such course is weighted, for purposes of computing averages, according to its semester hours of credit. A semester hour represents a course which meets once a week throughout a semester. In ordinary lecture courses, the class period is of fifty minutes duration; in laboratory work, the length of the period required for earning a semester hour of credit is at least twice the length of the ordinary lecture period.

Registration

Information and instructions concerning registration are distributed by the Office of the Registrar to all students approximately one month in advance of the beginning of each semester.

Formal registration takes place immediately preceding the opening of classes each term. Late registration and changes of course are permitted during the first two weeks of each semester. Withdrawal from a course may be permitted during the first ten weeks of the term, with grades recorded as outlined below.

A normal program consists of four semester courses in each term. For good reason, a student may take a fifth course. However, registration for a fifth course will not be allowed until all students have chosen their four courses. Honors students constitute an exception to this policy. They may register for a fifth course at the time of regular registration.

Failure to comply with the procedures specified by the Registrar for registration, changes of course, and withdrawal from a course, will result in either denial of credit or deficiency in the course.

Degree Requirements

The College offers two degrees in course: the Bachelor of Arts (A.B.) and the Master of Science (M.S.) in Chemistry.

The Bachelor of Arts degree includes up to a maximum of 14 courses in a *major* field, and the remainder in free *electives*, to a total of 32 courses. More details are found on p. 43, and in later sections, under the several departments offering majors. All majors qualify for the Bachelor of Arts degree.

In order to qualify for a degree from the college, at least one-half of a student's courses, including the two full semesters of senior year, must be completed at the College of the Holy Cross.

The Master of Science degree, given only in Chemistry, requires 30 semester hours of credit and an experimental thesis; the program is described more fully on p. 95.

Grading System

A student's standing will be determined by the results of examinations, classroom work and assignments. Only one grade will be submitted for each course for each student, each semester; this will be a composite grade for oral presentations, reading assignments, classroom discussions, tests, etc., and the final examination (which will normally carry one-third weight in determination of the composite grade). This grade will be submitted by the professor to the Registrar after the final examination.

Grades will not be translations of numerical scores, but estimated on the following bases: well-organized preparation and presentation of the subject matter; correct oral and written usage of English, successful completion of assignments, tests, readings, and examinations; application and participation in the classroom; imagination and initiative.

Reports of academic grades are sent to the student, and to his parents or guardian, at the end of each semester, as soon as all financial obligations have been fulfilled.

Grades

The following symbols are used to indicate the quality of the student's work in each course:

<i>Symbol</i>	<i>Description</i>	<i>Quality Point Multiplier</i>
A	Excellent	4.0
B+		3.5
B	Good	3.0
C+		2.5
C	Fair	2.0
D+		1.5
D	Low Pass	1.0
X	Removed Conditional Failure	1.0

Grades (continued)

Symbol	Description	Quality Point Multiplier
F	Failure (Deficiency)	0.0
WF	Withdrawal while Failing (Deficiency)	0.0
WP	Withdrawal while Passing	
W	Withdrawal without Prejudice	
CO	Conditional Failure	
AU	Audit	
AB	Absence from Final Examinations	
I	Incomplete	
S	Satisfactory ("Pass")	
U	Unsatisfactory ("Fail")	
J	Grade not submitted	

The grade CO may be given by the instructor to a freshman who presents satisfactory work in his first semester but fails the final examination in such a way that the composite grade is failing. The student is then allowed a Conditional Examination, success in which leads to a low Pass (X), but failure to a deficiency (F).

The grade CO or AB is changed to F unless the Conditional or Absentee Examination is successfully taken at the time appointed by the Registrar. The grade I becomes an F unless the missing work is submitted within one week after the final examination in the course. Exceptions to these regulations will be granted only by the Dean of the College, and only upon written petition.

The grade X ordinarily indicates that a first semester freshman has achieved a Low Pass by passing a Conditional Examination. It may also signify that a freshman, or other student engaging in the subject for the first time, has removed a deficiency incurred in one of certain first semester courses, by passage of the second semester of the same course with a grade of C or better.

Withdrawal from a course, with approval, during the first two weeks of a term leads, if it is not replaced by another course, to the grade W. After the second week, withdrawal with approval will be graded WP or WF according to the judgment of the instructor. Withdrawal from any course after the tenth week leads automatically to a WF, as does withdrawal without approval at any time.

Pass/Fail

Dean's List

The grades S and U are the so-called "Pass/Fail" grades.

Any student may take *one free elective* per semester (i.e., not a course in student's major, not a course required in fulfillment of major requirements) on a Pass/Fail basis.

Qualifications:

1. A student will indicate on a special Pass/Fail card which course, if any, he wishes to take on a Pass/Fail basis at the time of registration.
2. The teacher involved will know the names of all students who have signed up for a course on a Pass/Fail basis. The grades S or U will be assigned to the students by the teacher. These grades will not be transformed by the Registrar. S or U grades shall not be counted in fulfilling major requirements, if the student changes his major.
3. Credit for courses taken on a Pass/Fail basis will count towards the total number of credits needed for graduation. A failure (or Unsatisfactory grade) will not be averaged into a student's QPI, but will be placed on the student's record. The student will be required to make up this deficiency in the usual manner.

Quality Points

Each of the Grades from A to WF in the above list is assigned a multiplier, as indicated, which weights the grade in computing averages. Multiplying this weighting factor by the number of credit hours assigned to the course gives the quality points earned in it.

None of the other grades in the above list carry quality point multipliers; credits associated with such grades are not used in calculating averages.

Quality Point Index

Dividing the total number of quality points achieved in all courses by the number of credit hours assigned to these courses determines the Quality Point Index (Q.P.I.), or scholastic average.

If the credits and quality points are earned in a single semester, the average so calculated is the Semester Q.P.I.; if all the student's credits and quality points to date are used, the calculation yields his Cumulative Q.P.I.

Honor Grades

The following criteria determine Honor Grades:

Dean's List

<i>First Honors:</i>	A semester Q.P.I. of 3.700 or above.
<i>Second Honors:</i>	A semester Q.P.I. of 3.500 to 3.699.

Graduation Honors

<i>Summa Cum Laude:</i>	A cumulative Q.P.I. of 3.870 or above.
<i>Magna Cum Laude:</i>	A cumulative Q.P.I. of 3.700 to 3.869.
<i>Cum Laude:</i>	A cumulative Q.P.I. of 3.500 to 3.699.

In calculations of the Q.P.I. for the Dean's List or for Graduation Honors, only those credits and quality points earned at Holy Cross (including those earned during Junior Year Abroad) may be counted.

Requirements for Advancement

To be eligible for academic advancement a student must remove all deficiencies and meet the minimum cumulative average requirements given in the next section.

Academic Probation

Academic Probation is not a penalty, but a warning and an opportunity for improvement; probationary status has a duration of one semester, and is determined by a student's low cumulative average (Q.P.I.) at the end of the preceding semester, unless this has been sufficiently improved by success in an intervening summer session.

As soon as a student is placed on, or removed from, probation, he will be notified in writing by the Registrar of such action; copies of the notice will be sent to his parents and advisor.

The following rules delineate the limits of academic probationary status.

FRESHMAN YEAR

Any freshman having a cumulative average of 1.500 but less than 1.750 at the end of the freshman year will be on probation for the first semester of the sophomore year.

SOPHOMORE YEAR

A sophomore with a cumulative average of 1.750 but less than 2.000 at the end of the first semester will be on probation for the second semester of sophomore year.

A sophomore with a cumulative average of 1.850 but less than 2.000 at the end of the sophomore year will be on probation for the first semester of junior year.

JUNIOR YEAR

A junior with a cumulative average of 1.950 but less than 2.000 at the end of the first semester will be on probation for the second semester of junior year.

A junior with a cumulative average of 1.950 but less than 2.000 at the end of junior year will be liable to dismissal or placed on probation for the first semester of senior year at the discretion of the Committee on Academic Standing.

SENIOR YEAR

A senior with a cumulative average of 1.950 but less than 2.000 at the end of the first semester will be on probation for the second semester of his senior year.

Any senior who does not have a cumulative average of 2.000 or better at the end of senior year will not graduate.

Removal of Probation or Deficiency

Probationary status is ordinarily removed by the achievement, in the next semester, of the cumulative average required for the later semester. Grades of C or better, earned in Summer Session courses approved in advance by the Dean may be accepted in transfer by the College for the improvement of one's Q.P.I. Credits and quality points accepted in transfer will be recorded on the student's permanent record, and included in the calculation of his cumulative average, for all purposes other than the award of honors.

Each deficiency must be removed by a Grade of C or better, earned in a Summer Session course approved in advance by the Dean, in the summer immediately following its incurral. The credits attempted in the failed course will remain on the student's transcript, and will be used in calculating his average; credits and quality points accepted in transfer to remove the deficiency will be recorded and used in calculation of the Q.P.I., except for the award of honors.

Deficiencies may not be made up by taking extra courses in subsequent terms. An exception may be made for failure of a course in the first semester of senior year.

Concurrent Registration

In 1967, the six four-year colleges and four two-year colleges in the Metropolitan Worcester Area formed the Worcester Consortium for Higher Education. Through cross registration, joint faculty appointments and curriculum projects, and other efforts, the Consortium explores ways of

broadening academic programs for faculties and students as well as expanding continuing education opportunities and community service activities.

With the permission of the Dean, students enrolled at the College of the Holy Cross may register for courses at Consortium institutions.

Transfer of Credit

Acceptance of work done at other institutions will be affirmed promptly in writing, at the time of readmission, or of admission to advanced standing or advanced placement with credit. All such courses, credits, grades and quality points will be entered on the record at the time of acceptance. No renegotiation of such acceptances will be made at any subsequent time, after further work has been undertaken. Such transferred credits will be included in the calculation of the student's average, except for the determination of semester or graduation honors.

Junior Year Abroad

A limited number of students who give promise in their first two years that they will make good use of the advantages of study in another culture may be approved for the Junior Year Abroad Program. Applicants must have the approval of the Faculty Committee on the Junior Year Abroad, and present a proposed plan of study acceptable to the major advisor and the Dean. Approval is currently granted for study at a number of European universities, the College is an affiliate of the Institute of European Studies.

Participation in this program is normally limited to students with B averages (Q.P.I. of 3.000 or better) for their first two years. If students intend to take courses abroad in a language other than English, they must complete two years of courses in that language at Holy Cross before going abroad. At their interviews by the Junior Year Abroad Committee, students should expect to be questioned in the language appropriate to their study center and to demonstrate to the committee a reasonable competence in understanding and speaking that language.

The presence in a student's transcript of courses concerned with the history, literature, fine arts, and philosophical contributions of the country or area where they intend to study will be a positive point in securing committee approval for study abroad.

Ordinary participation in the Junior Year Abroad Program begins with the fall semester, and lasts for one full academic year. Students in the program are considered fully enrolled students of the College of the Holy Cross during that year. Credits and quality points earned in the program are included in all calculations of academic averages, including those which determine semester or commencement honors.

Voluntary Withdrawal from College

A student who withdraws voluntarily from the College is entitled to separation in good standing under the following conditions:

1. He must not be liable to dismissal for disciplinary reasons.
2. He must not be liable to dismissal for academic reasons.
3. He must return all College property.
4. He must settle all financial indebtedness with the College.
5. He must properly notify the Dean of his intention to withdraw.

Academic Dismissal

A student will be required to withdraw from the College if he has become liable for a third successive semester on probation, or if he fails to achieve, at the end of any semester, the minimum quality point average specified above for probationary status, or if he has acquired three or more failures (*F* or *WF*) during any academic year.

A student may be required to withdraw from the College if he has incurred probation for the first semester of senior year, or if he has acquired a total of six or more failures at any time during his four years, even though some of the deficiencies have been removed by attendance at summer session.

Any academic dismissal precludes the possibility of readmission before two full semesters intervene, during which time the student must have attended another accredited institution of higher learning.

Readmission to the College

Students who have withdrawn in good standing or have been dismissed with the right to reapply and wish to be readmitted to the College must apply to the Registrar. All application materials requested by the Registrar (completed application form, transcripts of all intervening academic work, letters of recommendation, statements of good standing) must be in the hands of the Registrar by June 1, for fall readmissions, by December 1, for spring readmissions.

Readmission is not automatic, even for voluntary withdrawnees, and may depend on the availability of space.

Transcript of College Record

The transcript fee for students is \$1.00 per copy.

No transcripts will be issued during the periods of Commencement, Registration, or Final Examinations.

Courses of Instruction

DEPARTMENT OF

Aerospace Studies

Professor: Emmonds (Chairman)

Staff: Melia, Santamaria

The mission of the Air Force Reserve Officers Training Corps is to commission active duty officers to meet specific Air Force requirements through on-campus college programs. The Air Force ROTC objective is to place on active duty lieutenants who demonstrate dedication to their assignments; willing acceptance of responsibility; critical and creative thinking; and the ability to speak and write effectively.

Air Force ROTC is the largest source of officers for the United States Air Force. The College of the Holy Cross is one of 173 colleges and universities throughout the country providing Air Force ROTC Training.

The basic qualifications for enrollment in the Air Force ROTC program require a student to be a citizen of the United States of good moral character and sound physical condition.

The ROTC Vitalization Act of 1964 (Public Law 88-647) provided legislative authority for the creation of a totally new and flexible Air Force ROTC program geared to the changing patterns of higher education and the needs of tomorrow's Aerospace Force. It authorized two separate Air Force ROTC programs on campus:

TRADITIONAL FOUR-YEAR AFROTC PROGRAM:

1. General Military Course is required for freshmen and sophomores; one credit per semester.
2. Professional Officer Course is required for juniors and seniors; three credits per semester.
3. Summer Field Training of four weeks duration is required between the sophomore and junior years at an Air Force base.
4. Cadet Military Training for one hour per week is required for all cadets.
5. Flight Instruction Program is available for all qualified senior cadets interested in becoming Air Force pilots. Each potential pilot re-

ceives 36½ flying hours at the local airport near the College campus. Also, he can qualify for a civilian pilot's license. All of this flying is at no expense to the cadet.

6. Financial benefits exceed \$1000.00. All cadets are provided uniforms and textbooks for AFROTC courses. Junior and senior cadets receive \$50.00 monthly pay, which is non-taxable, and approximately \$221.00 for the Summer Field Training plus travel pay to and from the Air Force base. A junior or senior cadet is entitled to free transportation on military aircraft if space is available and travel by railroad at the special military half-fare rate.
7. Draft deferment from induction in the Armed Forces under the Universal Military Training and Service Act is granted selected cadets.
8. Graduate Study is encouraged. The newly commissioned lieutenant is not required to serve on active duty immediately after graduation from the College of the Holy Cross, if he intends to obtain a graduate degree. The Air Force will defer his active duty until graduate study, including Law or Medical School, is completed.
9. Scholarships for tuition costs are available to a limited number of cadets for their freshmen, sophomore, junior and senior years. Applications must be made during the year prior to anticipated receipt of scholarship. Selection will depend mainly on three factors; score on the Air Force Officer Qualifying Test; grade average (Quality Point Index) for all college work completed; and the assessment by a Scholarship Review Board. Entering freshmen should apply to AFROTC Headquarters, Maxwell AFB, Ala., during their senior year at high school. Details on the AFROTC scholarship program can be obtained from their high school counseling office.
10. Supplementary activities are conducted in connection with the College Air Force ROTC program, but are not regularly scheduled and do not interfere with the students' academic time. These activities include visits to Air Force bases, orientation flights, welfare projects, athletic participation, social functions, career counseling and general guidance assistance.

NEW TWO-YEAR AFROTC PROGRAM

1. A student with two years of undergraduate or graduate study remaining may apply in the academic year preceding those two remaining years. This is necessary to test the applicant, to process the application and test results, and to select the qualified candidates for AFROTC enrollment.

2. Summer Field Training of six weeks duration is required at an Air Force base prior to enrollment in the Professional Officer Courses of the AFROTC curriculum.

3. Professional Officer Course is required for juniors and seniors; three credits per semester.

4. Flight Instruction Program is available for all qualified senior cadets interested in becoming Air Force pilots. Each potential receives 36½ flying hours at the local airport near the college campus. Also, he can qualify for a civilian pilot's license. All of this flying training is at no expense to the cadet.

5. Financial benefits exceed \$1000.00. All cadets are provided uniforms and textbooks for AFROTC courses. Junior and senior cadets receive \$50.00 monthly pay, which is non-taxable, and approximately \$202.00 for the Summer Field Training plus travel pay to and from the Air Force base. A junior or senior cadet is entitled to free transportation on military aircraft, if space is available, and travel by railroad at the special military half-fare rate.

6. Draft deferment from induction in the Armed Forces under the Universal Military Training and Service Act is granted to all cadets.

7. Graduate study is encouraged. The newly commissioned lieutenant is not required to serve on active duty immediately after graduation from the College of the Holy Cross, if he intends to obtain a degree. The Air Force will defer his active duty until graduate study, including Law or Medical School, is completed.

8. Supplementary activities are conducted in connection with the college Air Force ROTC program, but are not regularly scheduled and do not interfere with the students' academic time. These activities include visits to Air Force bases, orientation flights, welfare projects, athletic participation, social functions, career counseling and general guidance assistance.

GENERAL MILITARY COURSE

The General Military Course (GMC), a two year course, examines the role of U.S. military forces in the contemporary world, with particular attention to the United States Air Force, its organization and mission.

AEROSPACE STUDIES 100.

A study of the doctrine, mission, and organization of the United States Air Force; U.S. strategic offensive and defensive forces; their mission, function and employment of weapons; civil defense; aerospace defense; missile defense; U.S. general

purpose and aerospace support forces; the mission, resources, and operation of tactical air forces, with special attention to limited war; review of Army, Navy and Marine general purpose forces.

Two hours.

AEROSPACE STUDIES 200.

A study of defense policies; theories of general war; nature and context of limited war; policies and strategies of the Soviet Union and China; the role of alliances in U.S. defense policies; defense organization and decision-making; organization and function of the Department of Defense; role of the military in the United States' national policies; the elements and process of defense decision-making.

Two hours.

PROFESSIONAL OFFICER COURSE

The Professional Officer Course, taken during the cadet's junior and senior years, concentrates on three main themes: astronautics and aerospace power, the principles and practice of leadership, and the principles and practice of management, as related to the U.S. Air Force.

AEROSPACE STUDIES 300.

Growth and Development of Aerospace Power.

A critical analysis of the development of air power and aerospace power to include the doctrine, technology, organization and utilization of manned and unmanned aircraft and space vehicles is featured. The fall semester is a philosophical explanation of the political, military, economic and technological factors and events that influenced and affected the development of aerospace power within the United States and the world. The spring semester is a study of the evolution and evaluation of the U.S. space programs; review of the main characteristics of the solar system, types of orbits and trajectories; and an examination of the current and planned capabilities for space operations. The course includes an extensive study of operating principles, characteristics and problems associated with all major components of space exploration systems. Through the year, students will be expected to make field trips, prepare individual and group presentations for the class, write reports and otherwise participate in group discussions, seminars and conferences.

Six credit hours.

AEROSPACE STUDIES 400.

The Professional Officer.

Aerospace Studies 400 includes the meaning of professionalism, professional responsibilities, the military justice system; leadership theory, functions; problem solving; functions, and practices, management principles and functions; and management tools, practices and controls.

Three credit hours.

DEPARTMENT OF

Biology

Professors: Flavin (*Chairman*), Lingappa

Associate Professors: Campbell, Crowe, Healy, McSweeney

Assistant Professor: Roffman

Instructor: Funston

The biology curriculum is designed to provide our major a program with the scope and depth needed for entrance to graduate school and one which, within the limits imposed by the size and backgrounds of the staff, available space, facilities and equipment, can be adapted to meet the diverse interests of potential biologists. All biology majors are required to take Biology 13, one course from each of the three groups and four additional courses from any of the groups. Biology majors must also take a minimum of four courses in chemistry, including organic chemistry, a minimum of two courses in physics and a minimum of two courses in mathematics.

The courses offered are as follows:

Group I:

- Biol. 65: Histology
- Biol. 101: Biochemistry
- Biol. 102: Physiology of cells and tissues
- Biol. 104: Microbiology
- Biol. 120: Developmental cytology

Group II:

- Biol. 21: Introduction to developmental biology
- Biol. 54: Comparative chordate anatomy
- Biol. 61: General genetics
- Biol. 106: Animal cell and organ culture
- Biol. 117: Developmental mycology
- Biol. 118: Biology of the invertebrates

Group III:

- Biol. 59: Systematics and evolution
- Biol. 112: Population and community ecology
- Biol. 115: Introduction to the aquatic sciences
- Biol. 116: Biology of symbiosis

In addition, Biology 201-202 (Undergraduate research) and Biol. 203-204 (Biol. seminar) afford qualified students an opportunity to do research or literature study of a particular topic under the supervision of a staff member. Honors candidates must elect Biology 201-202.

BIOLOGY 11.

Cell Biology.

Introduction to biology at the molecular and cellular level of organization. The processes of cellular absorption, excretion, growth, division, inheritance, differentiation, association, ageing, contraction, locomotion, energy transduction, conduction, photosynthesis and bioluminescence will be examined. The laboratory will be concerned with biological instrumentation and the functional analysis of procaryotic and eucaryotic cells. Three lectures and one lab.

Four credit hours.

(Offered both semesters)

BIOLOGY 13.

Introduction to Biology.

Selected topics emphasizing basic biological principles as related to levels of biological organization. Three lectures and one laboratory period.

Four credit hours.

1st sem. 1971-72.

BIOLOGY 14-15.

Topics in Biology.

Reading and discussion of biological literature with emphasis on concepts rather than technical considerations.

Three or six credit hours.

(Offered both semesters.)

May be taken either or both semesters.)

BIOLOGY 21.

Introduction to Developmental Biology.

An introductory study of developmental processes in animals and, to a lesser degree, in plants. Analysis of those factors and mechanisms which integrate and coordinate these developmental processes is included. Three lectures and one laboratory period.

Four credit hours.

(Offered both semesters)

BIOLOGY 54.

Comparative Chordate Anatomy.

A study of the anatomy, evolution and taxonomic relationships of chordates. Three lectures and one laboratory period.

Four credit hours.

2nd sem. 1971-72.

BIOLOGY 59.

Systematics and Evolution.

A study of the concepts of modern evolutionary biology with emphasis on the various factors underlying the mechanisms of evolution. Three lecture hours and two laboratory periods.

Four credit hours.

(Not offered 1971-72)

BIOLOGY 61.

General Genetics.

A study of the principles and mechanisms of inheritance and variation. Three lectures and one laboratory period.

Four credit hours.

1st sem. 1970-71.

BIOLOGY 65.

Histology.

A study of the microscopic and submicroscopic structure of vertebrate tissues and organs. Three lectures and one laboratory period. *Four credit hours.*

(Offered both semesters)

BIOLOGY 101.

Biochemistry.

This course studies the fundamental molecular constituents and reactions of the living state. Emphasis is placed on the experimental foundation for our knowledge of the structure and dynamics of these molecules. The student is expected to acquire a critical and analytical attitude toward experimental design, acquisition of data, and conclusions drawn.

The laboratory has a twofold function. First, it introduces the student to the properties and assay methods for molecules of biological origin. The purification and assay of an enzyme is an important part of this experience. Second, it encourages students to innovate and plan their own experiments to answer questions that arise in the course of prescribed laboratory work.

Prerequisites: Biology 13, a minimum of at least two years of chemistry with at least a B in the second semester of Organic Chemistry, or the consent of the instructor. Three lectures and one laboratory period. *Four credit hours.*

1st sem. 1971-72.

BIOLOGY 102.

Physiology of Cells and Tissues.

A study of those structures and functions common to most cells. An effort is made to integrate knowledge of biochemical reactions and molecular structure with cellular architecture as revealed by the electron microscope. Emphasis is given to the structure and function of cellular membranes and the methods employed in their study. Readings from the original scientific literature are an important part of the course, and the student is expected to exercise a critical attitude in evaluating the data, experimental design, and conclusions of these assignments. Prerequisites: Biology 101 or the consent of the instructor. Three lectures and one laboratory period. *Four credit hours.*

2nd sem. 1971-72.

BIOLOGY 104.

Microbiology.

Details of structure, physiology and life-histories of the viruses, the various bacteria and fungi will be studied along with brief references to other protists. Origins and development of microbiology, principles and practices of microbiological methods, principal types of microbial metabolism and alternate pathways, nutrition, growth, genetics and death of microorganisms will be examined. The course emphasizes total involvement of the student by working on an independent research project; a critical survey of original literature and presentation of a seminar and a final written paper on the research project. *Four credit hours.*

1st sem. 1971-72.

BIOLOGY 106.

Animal Cell and Organ Culture.

An empirical study of animal cells in single and aggregate isolation *in vitro*.

Emphasis is placed upon system design for the study of specific problems in the fields of cytogenetics, cytochemistry, histogenesis and tumorigenesis. Three lectures and laboratory by arrangement. *Four credit hours.*
(Not offered 1971-72)

BIOLOGY 112.

Population and Community Ecology.

An analysis of the interactions among members of the same population and among populations of different species. Three lectures and one optional laboratory period. *Three credit hours.*
2nd sem. 1971-72.

BIOLOGY 115.

Introduction to the Aquatic Sciences.

The course will be a general survey of the major aquatic habitats. The topics covered will include: the properties of water, the fundamental classification of habitats, the major physical and chemical variations in the habitats, the structure of biological communities. The emphasis of the course will be the interaction of the physical, chemical and biological components in the formation of distinctive ecosystems. Prerequisites: permission of the instructor. Three lectures and one laboratory period. *Four credit hours.*
1st sem. 1971-72.

BIOLOGY 116.

Biology of Symbiosis.

Symbiosis is broadly defined as "living with"; i.e., those various associations in which organisms of different species are found to have a more or less intimate interaction. Various terms have traditionally been used to describe these associations: Parasitism, Commensalism, Amensalism, Proto-cooperation, Symbiosis *sensu strictu*, Mutualism, etc. The objective of the course will be to examine a variety of associations and consider the unifying and differentiating characteristics involved. Discussion sessions, laboratory and field experiences will be the principal methods employed. Prerequisite: permission of the instructor. Three lectures and one laboratory period. *Four credit hours.*
(Not offered 1971-72)

BIOLOGY 117.

Developmental Mycology.

This course will survey the morphology, ultrastructure and composition of fungi; detailed account of morphogenesis and mechanisms of morphogenesis in selected examples in each of the major classes of the fungi. Metabolism and growth, sporogenesis, dormancy, germination, dimorphism, and development will be studied with emphasis on laboratory experience. Three lectures and one laboratory period. *Four credit hours.*
1st sem. 1971-72.

BIOLOGY 118.

Biology of the Invertebrates.

The course will be a survey of the development, structure, function, life cycles, ecology and evolution of selected invertebrate groups. A survey of the interrelationships of the range of invertebrate types will be followed by an in-depth treat-

ment of those key groups for which adequate data are available on the above topics. The primary emphasis of the course will be a correlation of structure and function. Laboratory exercises will involve morphology, physiology and field exercises. Three lectures and one laboratory period.

Four credit hours.

2nd sem. 1971-72.

BIOLOGY 120.

Developmental Cytology.

Cytological aspects of development and their molecular controls. Particular emphasis will be placed on the cytological aspects of genetics, biosynthesis and differentiation. The laboratory will be concerned with work in the field of experimental cytology. Three lectures and one laboratory period.

Four credit hours.

BIOLOGY 201, 202.

2nd sem. 1971-72.

Undergraduate Research.

This course involves an original and individual experimental investigation with associated literature study in one of the fields of biology under the supervision of a member of the staff.

Eight credit hours.

BIOLOGY 203, 204.

Biology Seminar.

An in-depth literature study of a particular topic under the supervision of a member of the staff.

*Three credit hours
each semester.*

DEPARTMENT OF

Chemistry

Professors: Fiekers, Martus (*Chairman*), Van Hook

Associate Professors: McMaster, Ricci

Assistant Professors: Andruchow, McGrath, Vidulich

Visiting Lecturer: Wheeler

The curriculum of the Department of Chemistry is designed to provide students with a sound training in the fundamental principles and basic techniques of the science rather than deal with specialized branches of the subject. Accordingly, a student who wishes to major in chemistry is advised to choose in his freshman year Chemistry 13, 14 and 16. He is advised also to elect in his freshman year Mathematics 31, 32. To continue in the chemistry curriculum the student must obtain an average of C in Chemistry 13, 14 and 16. Further requirements for the student who wishes to qualify for the Bachelor of Arts in Chemistry include Chemistry 21, 22, 54, 55, 56, 101. The student will confer with his departmental advisor regarding required courses in mathematics, physics and modern language.

The curriculum of the Department of Chemistry has been approved by the Committee on Professional Training of the American Chemical Society. Those who desire A.C.S. certification are required to elect in their senior year Chemistry 105 and three other advanced courses in chemistry. The normal offering in the Chemistry Department includes Chemistry 102, 103, 104. By arrangement with the chairmen of the departments involved a student may elect an upper division course in physics, biology or mathematics and with the permission of the chairman qualified students will be permitted to elect courses in the Graduate Division.

A student majoring in chemistry who wishes to fulfill premedical requirements is required to take the following chemistry courses: 13, 14, 16, 21, 22, 54, 55 and 56. He may substitute a biology course for Chemistry 101. The student will confer with his departmental advisor regarding required courses in mathematics, physics and modern language.

A student not majoring in chemistry who wishes to fulfill premedical requirements or who plans on majoring in biology, can begin his chemistry requirements by electing Chemistry 11, 12 in his freshman year. As noted above, the average grade of C in these courses is the minimum acceptable grade for continuing in the chemistry curriculum. For the present, the course in organic chemistry, Chemistry 23, 24 completes the chemistry requirements for biology majors and premedical students.

CHEMISTRY 11.

DEPARTMENT OF

General Principles of Chemistry I.

A study is made of the fundamental theories and general laws of chemistry. Subatomic and molecular structure of matter is emphasized, leading to a consideration of the various types and geometry of chemical bonds. The periodic table of the elements is introduced with sufficient descriptive chemistry to illustrate theory. Chemical calculations constitute a large part of the course. The laboratory experiments illustrate chemical principles, including some semi-micro qualitative analysis, and also serves as an introduction to laboratory technique. As a prerequisite it is strongly recommended that the student have had high school courses in chemistry and physics, and have had better than average marks in high school mathematics. Three lectures and one (three-hour) laboratory per week.

Four credit hours.

CHEMISTRY 12. General Principles of Chemistry II and Quantitative Analysis.

This course is a continuation of Chemistry 11. Emphasis is on ionic equilibria and oxidation-reduction reactions. Introductory concepts of thermochemistry and the energies involved in chemical reactions are also introduced. Again chemical calculations are strongly stressed. The laboratory exercises are designed to give the student a working knowledge of volumetric and gravimetric analytical techniques, and include acid-base, oxidation-reduction titrations and selected gravimetric experiments. Chemistry 11, 12 is a prerequisite for all continuing courses in chemistry. It is required for majors in chemistry and biology and other majors who wish to fulfill premedical requirements. Students majoring in biology, chemistry or seeking to fulfill medical requirements must complete Chemistry 11, 12 with an average of C or better prior to admission to courses in organic chemistry. Three lectures and one (three-hour) laboratory period per week.

Four credit hours.

CHEMISTRY 13. Structure and Bonding.

This course is designed to present the student with a fundamental working knowledge of the modern theories of chemical bonding including both the valance bond approach and the more current molecular orbital approach as applied to bonding situations in compounds of the representative and transition metal elements. Also, the crystal field approach to bonding in transition metals is covered. Basic stoichiometry and the development of atomic structure are included in this course. Three lectures per week.

Three credit hours.

CHEMISTRY 14. Inorganic Chemistry

This course entails an investigation of the chemical properties of the representative elements and the transition elements. Group reactivity and chemical periodicity are stressed. The course makes full use of the subject matter developed in Chemistry 13 and introduces the basic concepts of chemical dynamics and equilibria. Three lectures per week.

Three credit hours.

CHEMISTRY 16. Chemistry Laboratory-I.

This laboratory course is designed so that the student can develop a sensitivity in recognizing distinctions in both the physical and chemical properties exhibited by physical systems. Qualitative identification and both classical and modern purifica-

tion methods are treated in this course. In addition, certain selected stoichiometric experiments are included. One lecture and two four-hour laboratory periods per week. *Three credit hours.*

CHEMISTRY 21.

Organic Chemistry I.

This course is a study of organic compounds from two points of view: the chemistry of the functional groups and modern structural theory and reaction mechanisms. The laboratory exercises introduce the student to experimental techniques and a study of the chemistry of the functional groups. Three lectures and three hours of laboratory per week. Prerequisite: C average or better in Chemistry 13, 14 and 16. *Four credit hours.*

CHEMISTRY 22.

Organic Chemistry II.

This course is a continuation of Organic Chemistry 21. The laboratory work in this course will further include exercises in organic qualitative analysis. Three lectures and five hours of laboratory per week. *Five credit hours.*

CHEMISTRY 23.

Organic Chemistry I.

This course is essentially the same as Chemistry 21. Required for biology majors and others who wish to fulfill premedical requirements. Three lectures and one (three-hour) laboratory period per week. Prerequisite: C average or better in Chemistry 11, 12. *Four credit hours.*

CHEMISTRY 24.

Organic Chemistry II.

This course is essentially the same as Chemistry 22, but for a shorter laboratory period. Required of biology majors and other majors who wish to fulfill premedical requirements. Three lectures and one (three-hour) laboratory period per week. *Four credit hours.*

CHEMISTRY 41, 42.

General Chemistry.

This course is designed for students who are non-science majors, and it is intended to give them an insight into the material make-up of the world around them. Theories concerning the structure of matter and the interaction of matter are introduced. Descriptive matter for the course is chosen from economic substances, such as sulfuric acid, petroleum, coal, tar, rubber, plastics, foods, vitamins, hormones, proteins and the useful metals. Demonstrations illustrate the application of the scientific method. Three lecture hours per week. *Six credit hours.*

CHEMISTRY 43, 44.

Special Topics in Chemistry.

This course is devoted to those aspects of chemistry which impinge upon daily living. For those students only who have had a course in high school chemistry. Three lectures per week. *Six credit hours.*

(Not offered 1971-72)

CHEMISTRY 54.

Instrumentation.

This is a course in instrumental analysis treating the theory and practice of instru-

mental methods in quantitative analysis. The methods include spectrophotometry, chromatography, polarography and electro-analytic techniques. Organic as well as inorganic compounds comprise the material under study. Three lectures and one (three hour) laboratory period per week. *Four credit hours.*

CHEMISTRY 55.

Physical Chemistry I.

A study is made of the fundamental principles and methods by which the behavior of matters in its various states and forms is interpreted. Molecular constitution, thermochemistry, thermodynamics and the quantitative laws of solution are considered. A course in differential and integral calculus is a prerequisite. Laboratory training in this and the following course is designed to test the more important physico-chemicals laws, to inculcate physico-chemical techniques, and to develop the habit of quantitative interpretation of such phenomena. Three lectures and five hours of laboratory period per week. *Five credit hours.*

CHEMISTRY 56.

Physical Chemistry II.

This is a continuation of Physical Chemistry I and includes such topics as homogeneous and heterogeneous equilibria, reaction kinetics, electric conductance and electro-chemistry. Three lectures and five hours of laboratory per week. *Five credit hours.*

CHEMISTRY 60.

Special Topics in Organic Chemistry

This course is offered to students who have had at least four semesters of college chemistry. The topics will include those of mutual interest of the professor and the students. The course is conducted as a seminar. *Three credit hours.*

CHEMISTRY 62.

Special Topics in Physical Chemistry.

This course, offered to senior premedical students, will deal with the principles of thermodynamics and kinetics as applied to chemical reactions. Attention will be paid to reactions of biochemical interest. The student must have an introductory knowledge of calculus. Three lectures per week. *Three credit hours.*

(Not offered 1971-72)

CHEMISTRY 101.

Synthetic Organic Chemistry.

This course will provide students of advanced organic chemistry with the scope, limitation and stereochemical consequences of a selected group of organic reactions. The laboratory exercises will be devoted to the more advanced type of synthetic procedures, which are ordinarily beyond the scope of the introductory course. Two lectures and one (three-hour) laboratory period per week. *Three credit hours.*

CHEMISTRY 102.

Advanced Organic Chemistry.

The course deals with the application of physical methods to the study of organic compounds. Topics include structure and bonding, dipole moments and conformational analysis, acidity and basicity, methods of determining reaction mechanisms, structure-reactivity correlation and transition state theory. Three lectures per week. *Three credit hours.*

CHEMISTRY 103.

Advanced Physical Chemistry.

This course is designed to acquaint the student with quantum chemistry. The Schrödinger approach is used to calculate energy levels for simple systems and the method is applied to the hydrogen atom, simple molecules, and atomic molecular spectra. The molecular orbital and valence bond methods of bonding are also discussed. Three lectures per week.

Three credit hours.

CHEMISTRY 104.

Undergraduate Investigation in Chemistry.

This involves an original and individual experimental investigation with associated literature study in one of the fields of chemistry under the supervision of a member of the staff. Once a week the senior chemistry majors meet with the staff and graduate students in seminar.

Junior chemistry majors may begin their Senior research projects in second semester of Junior year. The culmination of any research project done under Chemistry 104 will be a research report to the advisor in the form of a journal article.

Three credit hours.

CHEMISTRY 105

Advanced Inorganic Chemistry.

This course is designed to give the student an advanced presentation of the modern concepts of bonding in inorganic chemistry both from an experimental and theoretical viewpoint. An introduction to quantum mechanics is given, followed by the valence-bond and the more current molecular orbital approach to bonding with emphasis on the symmetry properties of the compounds. The crystal field and ligand field approach to reaction rates and mechanisms of transition metal complexes in aqueous solution are also covered in this course. This course will consist of three lectures and one (three hour) laboratory period per week.

Four credit hours.

CHEMISTRY 106

Research Projects in Chemistry.

This course is limited to non-chemistry majors who are interested in doing a research project for an individual chemistry professor. Arrangements are to be made with the individual professor. The course is designed to be a one to two semester project. The students will take it as a fifth course on a pass/fail basis. The culmination will be a project report to the advisor.

Four credit hours.

GENERAL HONORS RESEARCH.

Selections.

Students interested in participating in the departmental honors program will be invited to submit applications to the departmental honors committee during the first semester of their sophomore year. The committee will review the student's performance to date and determine whether the student could reasonably benefit from the program. The committee will accept those applicants whom they feel qualify and defer decision on the others until the second semester of sophomore year when more information will be available. The committee will meet again and make final disposition of all cases. (Students who did not apply first semester may make application second semester.)

Program.

CHEMISTRY 100

Selected students will consult with each member of the department on research and will submit to the committee a first and second choice for research advisor. When possible a student will be given his first choice.

The student will then conduct with his research advisor an original research project culminating in a research thesis written during the last semester of his senior year. The thesis will be defended before the chemistry faculty. The student will be required to participate in the departmental seminar program.

Requirements.

Students' records of performance will be evaluated each semester by the committee. Participants whose research or academic performance is inadequate will be dismissed from the program. Participants are expected to maintain an overall QPI of 3.0 and a minimum grade of B in major courses.

Course Credits.

Students must register for Honors Research as a fifth course on a pass/fail basis for each semester they participate in the program. During the last semester they will register in Honors Research as a fourth course for credit.

Students who successfully complete this program will be graduated with "Honors in Chemistry."

The student will be required to participate in the departmental seminar program during the last semester of his senior year. The seminar program is a series of lectures and discussions on current topics in chemistry. The student will be expected to attend all seminars and to participate in the discussions. The seminar program is a required part of the Honors Research program.

CHEMISTRY 100

Research Projects in Chemistry

The student will be required to complete a research project during the last semester of his senior year. The project will be supervised by a faculty member. The student will be expected to attend all seminars and to participate in the discussions. The seminar program is a required part of the Honors Research program.

HONORS RESEARCH

The student will be required to complete a research project during the last semester of his senior year. The project will be supervised by a faculty member. The student will be expected to attend all seminars and to participate in the discussions. The seminar program is a required part of the Honors Research program.

GRADUATE DEPARTMENT OF

Chemistry

Professors: Fiekers, Martus (Director), Van Hook

Associate Professors: McMaster, Ricci

Assistant Professors: Andruchow, McGrath, Vidulich

The College conducts courses in chemistry for graduate students, leading to the Master of Science degree. Candidates must hold a baccalaureate degree from an accredited collegiate institution. An overall minimum quality point average of 2.5 is required (A=4.00). Candidates for admission should file applications with the Director before the fifteenth of March each year. In support of application each candidate should forward a transcript of his undergraduate record. Furthermore, the applicant should provide that letters of recommendation be supplied by two former college chemistry professors. In the case of successful applicants, a supplemental completed transcript with record of degree received, should be sent after graduation.

Thirty course hours, of which ten are in research, are required for the degree. Students without the minimum number of undergraduate courses will have an opportunity to make them up. The residency is generally from three to four semesters.

CHEMISTRY 200.

Chemical Thermodynamics.

This course develops the principles of chemical thermodynamics and includes applications. The fundamentals of statistical mechanics are also taught. Laboratory work comprises experiments in advance physical chemistry with emphasis on thermochemistry. Required of all graduate students. Three lectures per week for one semester.

Four credit hours.

CHEMISTRY 202.

Advanced Organic Chemistry.

This course deals with the application of physical methods to the study of organic compounds. Topics include structure and bonding; dipole moments and conformational analysis; acidity and basicity; methods of determining reaction mechanisms, structure-reactivity correlation and transition state theory.

This course will consist of three formal lectures and a fourth period devoted to an informal seminar in which current literature topics will be discussed.

Four credit hours.

CHEMISTRY 203.

Advanced Physical Chemistry.

This course is designed to acquaint the student with quantum chemistry. The Schrödinger approach is used to calculate energy levels for simple systems and

the method is applied to the hydrogen atom, simple molecules and atomic molecular spectra. The molecular orbital and valence bond methods of bonding are also discussed.

This course will consist of three formal lectures and a fourth period devoted to an informal seminar in which current literature topics will be discussed.

Four credit hours.

CHEMISTRY 205.

Advanced Inorganic Chemistry.

This course is designed to give the student an advanced presentation of the modern concepts of bonding in inorganic chemistry both from an experimental and theoretical viewpoint. An introduction to quantum mechanics is given, followed by the valence-bond and the more current molecular orbital approach to bonding with emphasis on the symmetry properties of the compounds. The crystal field and ligand field approach to reaction rates and mechanisms of transition metal complexes in aqueous solution are also covered in this course.

This course will consist of three formal lectures and a fourth period devoted to an informal seminar in which current literature topics will be discussed.

Four credit hours.

CHEMISTRY 209, 210.

History of Chemistry I. and II.

The first semester will include the historical development of fundamental chemical concepts up to and including those of the nineteenth century. The second semester will be devoted to a study of contemporary developments and contemporary chemists. There will be assigned readings. Required for all graduate students. One lecture per week.

Two credit hours.

(Not offered 1971-72)

CHEMISTRY 211, 212.

Department Seminar.

One hour per week. One credit for each semester. Total credit not to exceed two credit hours.

CHEMISTRY 213, 214.

Graduate Investigation in Chemistry.

This will comprise an original and individual experimental investigation beyond the undergraduate level in one of the fields of chemistry, supervised by a member of the staff. Research can be continued through four semesters.

Twelve credit hours.

CHEMISTRY 215.

The Literature of Chemistry.

This course is designed to awaken the student to the kinds of questions that send a chemist to the library, to acquaint him with the resources of a typical chemical library and to give him experience in locating efficiently specific kinds of desired information. The course is informal with no recorded credit. It is a preparation for the literature search that will be done in connection with the student's experimental investigation.

FACULTY AND AREAS OF RESEARCH

William Andruchow (Ph.D. Tulane 1967)—Physical Inorganic; Research Associate in Petrochemicals and Polymers; B. A. Fiekers, S.J., (Ph.D. Clark 1942)—Consultant in Science Education; J. A. Martus, S.J. (Ph.D. Clark 1952)—Natural products, chemistry for the non-science majors; M. G. McGrath (Ph.D. Massachusetts Institute of Technology 1967)—Organic Syntheses; P. D. McMaster (Ph.D. Clark 1961) Biochemistry, Stereochemistry; R. W. Ricci (Ph.D. New Hampshire 1961)—Photochemistry; A. VanHook (Ph.D. New York University 1934)—Crystal Growth; G. A. Vidulich (Ph.D. Brown 1964)—Physical Chemistry of Solutions.

EQUIPMENT FACILITIES

Major items of equipment to support the varied research activities include: Nuclear Magnetic Resonance Spectrometer, Recording Infra Red and UV-VIS Spectrophotometers, Vapor Phase Chromatographs, DU Spectrophotometer, UV Flow Analyzer and Fraction Collector. Each professor has his own individual research laboratory, containing special equipment for his own and directed research. The Data Processing Center has an IBM 360-30 Computer available for students.

ASSISTANTSHIPS

Teaching assistantships are available carrying a stipend up to \$2,400 for ten months. Fellows will devote not more than nine hours per week as laboratory instructors.

FOR FURTHER INFORMATION

Write to:

DIRECTOR, GRADUATE DIVISION
DEPARTMENT OF CHEMISTRY
COLLEGE OF THE HOLY CROSS
WORCESTER, MASSACHUSETTS 01610

DEPARTMENT OF

The Classics

Professor: Sampey

Associate Professors: Buckley, Carroll, Donaldson, FitzGerald, Happe, Healey, Lavery (Chairman)

Assistant Professors: Banks, Loewy, Ziobro

Visiting Lecturer: B. P. McCarthy

The curriculum of the Classics Department is formed around two principles. First, the liberal arts college student should be given the opportunity to study the Greek and Roman sources of Western Culture. Thus, courses on the introductory, intermediate and advanced level in Greek and Latin are available to all students, as well as courses in Greek and Roman history, politics and literature given in English. Secondly, the student who intends to make the study of classics his career is provided with a wide selection of courses, seminars, and tutorials over his four years to give him an extensive background preparation in Greek and Latin authors for his graduate school study.

Requirements for a major in Classics:

Minimum: 4 courses Latin—4 courses Greek

Maximum: 8 courses Latin—8 courses Greek

Depending on the student's background and interest he may concentrate on one of the two languages with minimal requirements in the other.

LATIN

LATIN 11, 12.

Introduction to Latin.

A grammar course introducing the student to the Latin language and Latin literature. *Six credit hours.*

LATIN 13, 14.

Intermediate Latin.

For those who have had one or two years of Latin in the pre-college period. *Six credit hours.*

LATIN 115, 116.

Advanced Latin.

A survey of Classical Latin Literature from its early remains to Macrobius. *Six credit hours.*

LATIN 121.

Roman Historians: Tacitus.

A study of the writings of Roman Historians with selections from Tacitus read in the original.

Three credit hours.

(Not offered 1971-72)

LATIN 122.

Roman Oratory.

Roman orations of Cicero in the original studied and analyzed rhetorically.

Three credit hours.

(Not offered 1971-72)

LATIN 124.

Roman Satire.

The meaning and form of Roman satire is observed in the selected works of Horace and Juvenal.

Three credit hours.

(Not offered 1971-72)

LATIN 147.

Lucretius.

An intensive examination of the poetic and philosophic message of Lucretius' Epicurean gospel, the *De rerum natura*.

Three credit hours.

(Not offered 1971-72)

LATIN 150.

Patristic Latin.

A study of the letters of Jerome and Sermons of Augustine and Leo the Great.

Three credit hours.

(Not offered 1971-72)

LATIN 153.

Medieval Latin

A Millenium of Late and Medieval Latin (374-1374), religious and secular. Selected readings from the chronicles, biographies, poems and satires.

Three credit hours.

(Not offered 1971-72)

LATIN 159.

Vergil: Eclogues and Georgics.

The development of pastoral and agricultural poetry in Rome as exemplified in Vergil's two poetic masterpieces.

Three credit hours.

(Not offered 1971-72)

LATIN 163.

Roman Comedy.

Selected plays of Plautus and Terence read in Latin combined with a study of Roman Comedy and its influence on later literature.

Three credit hours.

(Not offered 1971-72)

LATIN 166.

Ovid.

Selections from the elegiac verse of Ovid; a survey of the principal themes of the genre; the specific contributions that the poet made to the tradition; the continuation of the tradition in the love poetry of the Middle Ages. *Three credit hours.*

(Not offered 1971-72)

LATIN 201, 202.

Tutorial-Seminar.

Designed for selected students with approval of professor and chairman. Individual authors are studied such as Catullus, Horace, Livy, Seneca, etc.; or a reading program structured to a particular student's need may be chosen. *Six credit hours.*

GREEK

GREEK 11, 12.

Introduction to Greek.

A functional/inductive approach to the learning of ancient Greek through a study of the Greek text of the Gospel of St. John. This course leads to a second semester reading of the Greek text of a Classical author and/or the *Greek New Testament*, according to the individual's particular interest. (Recommended to students interested in Greek literature, English, Philosophy, Theology.) *Six credit hours.*

GREEK 13, 14.

Intermediate Greeks.

First semester: Readings and textual study of Greek prose authors.

Second semester: Readings from the Poetry of Greece. (Offered mainly for students who have completed Greek 11, 12.) *Six credit hours.*

GREEK 125.

Plato's Apology.

Plato's Apology, Crito and selections from Xenophon are studied and analyzed with a view to understanding Socrates and his thinking. *Three credit hours.*

GREEK 127.

Biblical Greek.

This course is offered to students who have had at least an Introductory Greek course; selected texts from the Greek New Testament are read and analyzed.

Three credit hours.

GREEK 147.

Greek Epic: Homer's Iliad.

A reading of selected books of the *Iliad* with focus on the history of the text, the Epic hero, and oral tradition. *Three credit hours.*

(Not offered 1971-72)

GREEK 156.

Euripides.

An analysis of three plays in Greek, with special attention on the dramatic technique and "modern" views of Euripides. *Three credit hours.*

GREEK 186.

Aristophanes.

Selected plays will be read in the original. Historical backgrounds, literary interpretation and study of the genre; comedy emphasized. *Three credit hours.*

(Not offered 1971-72)

GREEK 189.

Greek Choral Poetry.

The evolution of poetry between the Epic and Attic tragedy, culminating in the study of Bacchylides and Pindar. Some attention will be given to metrical developments between the Seventh and Fifth centuries. *Three credit hours.*

(Not offered 1971-72)

GREEK 190.

Development of Greek Literature in Prose.

The stages leading to the conflicting claims for cultural and political supremacy between the schools of Isocrates and Plato are taken up by a study of the Sophists, the development of Greek rhetoric and selected dialogues of Plato.

Three credit hours.

(Not offered 1971-72)

HELLENIC TRADITION SEMINAR.

Each year one author is read and analyzed throughout two semesters in preparation for a public, oral examination in May. In the past fifteen years such authors as Euripides, Thucydides, Plato, Herodotus, Aeschylus, Aristophanes and Sophocles have been offered.

For the academic year 1971-72, Hesiod-Homeric Hymns will be offered.

GREEK 211, 212.

Hellenic Tradition Seminar (Hesiod-Homeric Hymns).

A study of the Greek text of *Hesoid*, the *Theogony*, *The Works and Days*, the *Shield* and the important fragments. Also the corpus of the Homeric Hymns. Background material of Greek religion in the archaic age, the social and economic conditions of Greek peasant life and comparative passages from the *Iliad*, the *Aeneid* and *Vergil's Georgics* will be included. *Six credit hours.*

GREEK 251, 252.

Tutorial Seminar.

Designed for selected students with approval of professor and chairman. Such areas as Aeschylus, Demosthenes, Pindar, etc., are available; also an intensive Introductory Greek course, usually during the second semester, is offered.

Six credit hours.

CLASSICS (No Latin or Greek Required)

CLASSICS 127, 128.

Classics in English.

The objective of this course is the attainment of a reasonable understanding and

appraisal of Classical literature through the application of Classical theories of literary art to the major works of the major Greek and Roman authors.

The first semester deals with Greek authors.

The second semester deals with Roman authors.

Six credit hours.

CLASSICS 129, 130.

Latin Literature in Translation.

Late Republican and Early Imperial Literature and Art.

Six credit hours.

(Not offered 1971-72)

CLASSICS 131, 132.

Roman and American Societies.

A comparative study of the similarities and differences between Roman Society and contemporary American society as seen through the extensive reading and discussion of ancient and modern historical and literary sources. *Six credit hours.*

CLASSICS 133.

Greek and Roman Drama.

Selected plays of Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Plautus, Terence and Seneca.

Three credit hours.

CLASSICS 134.

Greek and Roman Epic.

Readings in Homer, Apollonius, Vergil and Lucan.

Three credit hours.

CLASSICS 135, 136.

Greek Literature in English.

A two semester intensive survey of Greek literature.

Six credit hours.

(Not offered 1971-72)

CLASSICS 137.

Women in Greek Literature.

An introduction to such famous heroines as Helen of Troy, Penelope, Electra, Medea, Lysistrata. Reading of selections from the *Iliad* and *Odyssey*, and of plays of Aeschylus, Sophocles, Euripides and Aristophanes.

Three credit hours.

CLASSICS 141.

Ancient Political Philosophy.

A study of the ancient literature concerning the state and its forms. The evolution of political thought from its beginnings in early Greek poetry through Plato and Aristotle to Polybius will be considered in relation to the historical development of actual political institutions.

Three credit hours.

CLASSICS 142.

Greek Ethics.

A survey of the religious, social and philosophical foundations underlining ancient Greek conduct.

Three credit hours.

(Not offered 1971-72)

CLASSICS 143.

Roman Political Ideas.

A study of the concept of the *res publica* and its historical and its historical transformation under the influences of religion, philosophy, political machination, the expansion of Roman power, and certain qualities inherent in the Roman character.

Three credit hours.

(Not offered 1971-72)

CLASSICS 150.

Introduction to Roman Archaeology.

A study of the principal archaeological sites in Latium and Campania stressing the development of Roman Architecture and the growth of urban life. Readings in primary literary sources and inscriptions.

Three credit hours.

CLASSICS 157.

History of Greece.

A study of Greek history from the beginnings to the death of Alexander.

Three credit hours.

CLASSICS 158.

History of Rome.

The growth and downfall of the Roman Republic; the establishment of the principate; imperial government to the time of Diocletian; social and economic developments; foreign policy; sources for our reconstruction of Roman History.

Three credit hours.

CLASSICS 160.

Plutarch's Works.

A study of selected biographies and passages from the *Moralia* as reflections of the Greco-Roman experience.

Three credit hours.

CLASSICS 190.

Greek Religion.

A study of the main beliefs, movements, rites and practices of Greek religion from earliest times to the advent of Christianity.

Three credit hours.

(Not offered 1971-72)

CLASSICS 191.

Roman Religion.

Selected texts from Ovid, Cicero and Apulcius analyzed for an understanding of the religious forces present in ancient Rome.

Three credit hours.

(Not offered 1971-72)

CLASSICS 201-202.

Tutorial Seminar.

Designed for selected students with approval of professor and chairman. Particular areas of classical civilization and/or literature such as The Art of Ancient Rhetoric; or a reading program of classical authors in English structured to the student's interests.

Six credit hours.

DEPARTMENT OF

Economics

Professors: R. F. X. Cahill, B. W. McCarthy, Peragallo, Petrella (*Chairman*)

Associate Professors: T. J. Cahill, Judge, R. J. Smith

Assistant Professors: Bender, J. D. O'Connell, J. F. O'Connell, Harlow, Nordstrom

Instructors: Jordan, Cherry

Visiting Lecturer: Fahey

The curriculum of the department has been conceived with the one major objective of providing the student with as broad and well balanced an education as possible. Specialization is kept to a minimum. Course content is basically theoretical and aimed at developing the student's analytical and critical faculties, at stimulating his powers of interpretation, synthesis and understanding, and at training him to exact thinking. The emphasis is on the understanding of our economic system and on the analysis of its economic and business problems. The student is thus prepared to continue his education at the graduate level or to enter effectively into the business world. The curriculum is broadly integrated and in accordance with the liberal arts tradition.

The Economics Major

The *minimum* requirement for the economics major (including the premed economics major) is ten (10) semester courses in economics and two (2) semester courses in mathematics. (The *maximum* major is fourteen (14) semester courses in economics). The *minimum* major sequence is:

Freshman	Math 21, 22 (Intro: Calculus & Prob.)	2
	Econ. 11, 12 (Principles)	2
Sophomore	Econ. 125, 126 (Micro/Macro)	2
	Econ. 152 (Statistics)	1
Soph.-Jr. or Senior	Economics Electives	5

The department views additional electives in mathematics and computer science as desirable for the economics major, especially those students considering graduate work in economics and certain MBA programs. (See *Information For Advisors and Students, 1971-72*, pp. 12-17)

Ideally, the economic major begins in freshman year; however, for the student who changes his major at the end of freshman year, the sequence of major courses may begin in sophomore year.

Economics majors may take as many as three (3) courses in accounting as economics electives. However, accounting electives are restricted to the following: Economics 43, 44 and 147.

The Accounting Major

The requirement for a major in economics-accounting is ten (10) semester courses in accounting and law, six (6) semester courses in economics and two (2) semester courses in Mathematics (21, 22). Normally, the major in accounting will pursue the following sequence of courses:

<i>Freshman</i>	Financial and Administrative Accounting	2
	Mathematics	2
<i>Sophomore</i>	Asset and Equity Accounting	2
	Principles of Economics	2
<i>Junior</i>	Cost and Advanced Accounting	2
	Money and Banking	1
	Statistics	1
	Corporation Finance	1
<i>Senior</i>	Business Law	2
	Federal Income Tax	1
	Auditing	1
	Economics Elective	1

However, the Money and Banking, Statistics, Corporation Finance requirement and economics elective may be taken in either the junior or senior year. Moreover, with special permission of the accounting faculty, students who begin accounting in their sophomore year may take Economics 131, 132 (Asset & Equity) and 161, 167 (Cost & Advanced) simultaneously in their junior year.

Non-Majors

Non-majors who have had Economics 11, 12 are able to elect most of the standard offerings within the department. However, Economics 43, 44, 121 and 147 do not require the Economics 11, 12 prerequisite.

Moreover, those students who wish a one semester course in Economics may elect either semester of the Principles of Economics. In general, the student desiring a one semester overview of economics is advised to take Economics 11 (Macro Principles). However, the Department strongly recommends the full year sequence in Principles, especially if the student plans to take additional electives in Economics which normally require the 11, 12 prerequisite.

Economics 43, 44 and 147 are the only accounting courses open to non-majors. (i.e. Economics 15, 16, 131, 132, 145, 146, 161, 163, 165, 266 and 167 are open *only* to Accounting majors.)

Academic credit for the first semester of the following courses ordinarily *will not be given* unless the second semester is also completed: Economics 15 (16) 43 (44).

Advanced Placement in Economics

To any student from New York State achieving at least a C on the New York State College Proficiency examination in economics, the department offers credit and advanced placement. Students seeking credit should inquire in writing to the Chairman of the Department.

ECONOMICS 11, 12.

Principles of Economics.

A study of the basic institutions and principles underlying the operation of the economic system. In first semester, particular attention is given to national income analysis, fiscal policy and the business cycle, money, banking and monetary policy, economic growth and development and international trade. In second semester, emphasis is on the determination of commodity and resource prices under different market conditions, the distribution of income, unions and collective bargaining, and the regulation of industry.

Six credit hours.

ECONOMICS 15, 16.

Financial and Administrative Accounting.

A study of the fundamental principles of accounting for proprietorships, partnerships, and corporations, and of the basic theory underlying these principles. The course also considers the managerial uses of accounting data in such areas as credit and investment decisions, choice of financing, expansion or contraction of operations, and establishment of dividend policy.

Six credit hours.

ECONOMICS 43, 44.

Financial and Administrative Accounting.

Same as Economics 15, 16.

Six credit hours.

ECONOMICS 121.

Economic History of the United States.

A critical study of the development of the American economy from Colonial days to the present, focusing attention on such areas as agriculture, labor and industry, population and immigration, banking and finance, foreign and domestic commerce, transportation and communication, and the changing role of the government in economic life. Lectures, outside readings, book reviews.

Three credit hours.

ECONOMICS 125.

Micro-Economic Theory.

This course is concerned with the development of micro-economic topics at the intermediate level of analysis. Major areas of concentration are the analysis of demand and production theory using both classical and modern analytical tools,

the study of market structures, pure competition, monopolistic competition, oligopoly and monopoly, and the analysis of resource pricing and allocation in different market situations. Prerequisite: Economics 11, 12. *Three credit hours.*

ECONOMICS 126.

Macro-Economic Theory.

This course studies the behavior of aggregate economic phenomena in the economic system. Topic areas considered are the measurement of economic activity, the theory of income determination and the level of employment, monetary theory, general equilibrium analysis of the income and monetary sectors, and growth theory. Applications of the theory are made to problems involved in monetary and fiscal policy, international monetary policy and inflation, employment and growth policies. Prerequisite: Economics 11, 12. *Three credit hours.*

ECONOMICS 131, 132.

Asset and Equity Accounting.

This course is designed to serve the needs of the accounting major. Emphasis is placed on the basic assumptions that underlie modern accounting, the principles, procedures, and methods that are applied in the preparation of financial statements and the proper uses that can be made of financial data. With this background the student is prepared to analyze and interpret the full product of accounting. Special emphasis is placed on the Accounting Research Studies as well as the opinions of the Principles Board of the American Institute of Certified Public Accountants. Reference is also made to the latest income tax laws and other legislation affecting accounting practice. Prerequisite: Economics 15, 16.

ECONOMICS 145, 146.

Business Law (Based on the Commercial Code).

Required of all students majoring in accounting. The course includes contracts, agency, sales, negotiable instruments, the legal aspect of business associations, insurance, and property, both real and personal. The course is intended to correlate the accounting and legal aspects in reference to common business transactions. It is also intended to aid in the understanding of the social significance of law and the part it has played in the development of our economic life. Prerequisite: Economics 131, 132. *Six credit hours.*

ECONOMICS 147.

Accounting for Managerial Decisions.

This course stresses the use of accounting as a tool for managerial control. The course considers such subjects as budgeting and the setting of standards, accounting systems and internal control, product costing and cost analysis, and the administration of standard costs and budgetary systems of control. Relevant subject matter on cost accounting, production management and activity analysis or "linear programming" is also included. Prerequisite: Economics 43, 44.

Three credit hours.
(Not offered 1971-72)

ECONOMICS 151.

Corporation Finance.

After first considering the nature of the corporation and contrasting the corporation with other forms of business organization, this course then treats alternative methods of financing both long-term and short-term requirements for funds,

characteristic financial policies and structures of important industry groups, functions of securities exchanges, and the role of the promoter and investment banker in business finance. Attention is also given to the preparation of cash budgets and the analysis of financial statements. Prerequisite: Economics 11, 12.

Three credit hours.

ECONOMICS 152.

Statistics.

This course treats descriptive statistics; the binomial, normal, Student's, and chi-square distributions; principles of sampling, hypothesis testing, and parameter estimation; regression, correlation, and the analysis of time series. Applications will be drawn from business, economics, and accounting.

Three credit hours.

ECONOMICS 153.

Money and Banking.

The purpose of this course is to introduce the student to the economic principles governing modern monetary arrangements, credit and banking in the economic system. Special emphasis is placed upon an understanding and evaluation of the control mechanisms in the central banking system and the integration of modern income and monetary theory. Prerequisite: Economics 11, 12.

Three credit hours.

ECONOMICS 154.

Advanced Statistics.

This course includes study of the probability basis of statistical distributions; properties of important distributions; the general decision model; topics in statistical inference including Bayesian statistics and analysis of variance. Prerequisite: Economics 152.

Three credit hours.

ECONOMICS 155.

Managerial Economics.

Topics included in this course are Decision Making, Forecasting, Demand and Supply, Management of the Product Variable, Price as a Tactical Weapon, Economic Bases of Logistics Analysis, Risk Management, Commodity Markets and Linear Programming Techniques. Prerequisite: Economics 125, 126.

Three credit hours.

ECONOMICS 156.

Operations Research.

This course is designed to acquaint the student with the application of mathematical and statistical techniques to economic and business problems. It involves an introduction to several mathematical models for decision making, including transportation and assignment techniques. All models deal with maximization or minimization of an objective when there are constraints on available action. Linear programming and game theory are treated in depth. Prerequisite: Economics 11, 12.

Three credit hours.

ECONOMICS 158.

Public Finance.

This course seeks to discern and appraise the effects of government financial policies. Basic principles and issues of government budgeting, spending, and revenue raising are investigated. Attention is also given to the problems of the public debt, fiscal policy and intergovernmental fiscal relations. Prerequisite: Economics 11, 12.

Three credit hours.

ECONOMICS 161.

Cost Accounting.

An introductory study of basic cost accounting principles, practices, and procedures, with a special emphasis on job order costs, process costs, standard cost, and estimated costs; managerial control through the use of cost accounting data and procedures; and special applications of cost accounting procedures. Prerequisite: Economics 131, 132. *Three credit hours.*

ECONOMICS 163.

Auditing.

A study of the theory and practice of auditing and an examination of professional ethics. The laboratory work covers audit problems and a test audit of a small manufacturing concern. Prerequisite: Economics 161. *Three credit hours.*

ECONOMICS 165.

Federal Income Taxation.

A study of the federal income tax laws as they affect individuals, partnerships, and corporations. Consideration is also given to the history of the federal income tax statutes and the methods of enacting tax legislation. Prerequisite: Economics 131, 132. *Three credit hours.*

ECONOMICS 167.

Advanced Accounting.

Parent and subsidiary accounting relationships are studied and a critical analysis is made of the principles and postulates of accounting based upon the study of the Accounting Research Bulletins of the American Institute of Accountants and the Accounting Releases of the Securities and Exchange Commission. Research topics are assigned and reported upon. The course is organized on a group discussion basis. Prerequisite: Economics 161. *Three credit hours.*

ECONOMICS 171.

Early Economic Theories.

This course studies the development of economic analysis from the Greek and Roman period up through 1870. Major concentration is on Mercantilist monetary theory and policy, value and distribution theories of the Classical economists, the rise and development of Economic Liberalism and Karl Marx. Prerequisite: Economics 11, 12. *Three credit hours.*

ECONOMICS 172.

Modern Economic Theories.

This course studies the development of economic analysis from 1870 up to the present. Topics considered are, the Marginalist and Historical schools, Alfred Marshall and neo-classical economics, Mathematical economics, Economic Liberalism in the twentieth century, American Institutionalism, Imperfect Competition theories, and the development of Welfare Economics. Prerequisite: Economics 11, 12. *Three credit hours.*

(Not offered 1971-72)

ECONOMICS 173.

Comparative Economic Systems.

The focus of this course is on the economic principles and issues involved with finding alternatives to the market economy. Capitalism is critically reviewed and

evaluated, an historical sketch of the search for alternative economic systems is made, and three alternative models for Capitalism are examined: i.e., Authoritarian Capitalism, Authoritarian and Liberal Socialism. Finally, the Russian, British and Fascist German economies are presented as examples of economic systems in action. Prerequisite: Economics 11, 12. *Three credit hours.*

ECONOMICS 175.

Industrial Organization and Public Policy.

This course presents an investigation of the basis of government-business relationships together with an historical development of control. It includes special problems of control relative to trusts, public utilities, transportation, extractive industries, exchanges and labor. Prerequisite: Economics 11, 12. *Three credit hours.*

ECONOMICS 178.

International Economics.

This course is primarily a study of the theory of international trade. It is concerned with the theoretical basis for international trade, the determination of the terms of trade among nations, the price and income adjustment processes in a nation's balance of payments and the effect of restrictions such as tariffs and import quotas upon a trade situation. Prerequisite: Economics 11, 12. *Three credits hours.*

ECONOMICS 181.

Economic Growth and Development.

This course examines the theoretical and institutional factors influencing economic growth. Attention is given to various models of economic growth, the relation between social, political and economic institutions and the pattern of economic growth, the optimal public policy mix for economic growth and special problems of growth faced by the underdeveloped nations. Prerequisite: Economics 11, 12. *Three credit hours.*

ECONOMICS 183.

Urban Economics.

This course develops modes of economic analysis appropriate for analyzing the complex problems of the urban community. Attention is focused on an increased understanding of the emerging policy issues facing cities today. Special emphasis is given to the following: location and growth of cities; poverty and urban labor markets; transportation-communication and externalities; and policy formation for urban development and renewal. Prerequisite: Economics 11, 12. *Three credit hours.*

ECONOMICS 184.

Regional Economics.

This course examines the theoretical constructs and practical aspects appropriate for the economic analysis of regions. Emphasis is placed on the following: industrial location theory; population and migration; income distribution; and the role of government in solving regional problems. Several analytical techniques will be covered including economic base method, interregional input-output analysis and linear programming. Prerequisite: Economics 11, 12. *Three credit hours.*

ECONOMICS 192.

Economics of Human Resources.

This course analyzes the labor market in light of recent developments in economic theory. The following areas are explored: labor force participation studies,

human capital theory, location theory and marginal productivity theory. Interferences with the market through legislation, discrimination and labor unions and the interactions between the labor market and other sectors of the economy are considered. Prerequisite: Economics 11, 12.

Three credit hours.

(Not offered 1971-72)

ECONOMICS 194, 195.

Industrial Relations.

A critical examination of industrial relations within the context of the American economic system, focusing upon the functions of management, labor and government, as these functions apply to the collective bargaining process. The course is of one year's duration and offers a choice of outside work projects, independent research, apprenticeship programs, extra course work through the facilities of the Institute of Industrial Relations, seminars and some lectures. In addition to the written work, a final oral comprehensive examination is required. Prerequisite: Economics 11, 12.

Six credit hours.

ECONOMICS 197.

Mathematical Economics.

This course is an introduction to the use of mathematical analysis as applied to economic theory and practice. It consists of an introduction to mathematical models; a brief survey of elementary set theory; an extensive analysis of simple and complex linear systems (including demand and supply models, equilibrium models for several goods, national income models, imputations, linear programming, Walrasian general equilibrium, and techniques of determinants); an introduction to logarithmic functions and applications; and an examination of differential and integral calculus and its applications to economics. Student preparation of papers treating specified economic topics in a mathematical manner is an essential part of the course. Prerequisite: Economics 125, 126.

Three credit hours.

ECONOMICS 217, 218.

Freshman-Sophomore Economics Seminar.

This program involves an accelerated, analytical development of the principles of economics in addition to student participation and discussion on selected works in the area of history of economic ideas and institutions.

Six credit hours.

(Not offered 1971-72)

ECONOMICS 223.

Seminar in U.S. Economic History.

Emphasis is placed upon the reading and discussion, in their historical context, of books and articles pertaining to controversial questions in American economic history, such as the tariff, land policy, antitrust policy, and fiscal and monetary policy. Prerequisite: Economics 11, 12.

Permission of Instructor

Three credit hours.

(Not offered 1971-72)

ECONOMICS 259.

Problems in Public Finance and Fiscal Policy.

This course explores in depth the principles of analysis developed in Economics 58. Content of the course will include elements of advanced theory and intensive reading and student research into specific problem areas. Students will be free to pursue research within the field in line with their interests. Prerequisite: Economics 158.

(Permission of Instructor)

Three credit hours.

ECONOMICS 266.

Federal Tax Policy Seminar.

An inquiry into proposed reforms of the existing federal tax structure of the United States, emphasizing reform of the federal income tax upon individuals and corporations, and also considering changes in the taxation of gifts, trusts, and estates. Present tax law and suggested revisions will be reviewed in the light of the various objectives of tax policy such as increased fairness, reduced complexity, minimum restraint upon economic growth, and promotion of greater economic stability. Consideration will also be given to the use of tax policy to achieve various social and political objectives. Prerequisite: Economics 165.

Three credit hours.

ECONOMICS 277.

Directed Readings in Economics.

A program in reading and research open to qualified Economics majors.

Three credit hours.

ECONOMICS 279.

International Economic Problems.

This course will concentrate on selected problems in International Economics, e.g. the international monetary system; problems and policies; international trade and economic development; the theory of customs unions; and, special topics in the theory of International economics. Prerequisite: Economics 178 and permission of instructor.

Three credit hours.

ECONOMICS 283.

Economics of Discrimination Against Blacks and Other Minority Groups.

The basic object of the course is an investigation of how discrimination in America's social and economic structures operates to oppress and exploit Blacks and other minority groups. A theoretical framework of the effects of discrimination on the general level of economic activity, the allocation of resources, and the distribution of income will first be presented. Attention will then focus on specific problems such as the causes of structural unemployment among Blacks and the effects of this on the stability of the Black family, the problems of housing and urban renewal, poverty and the welfare system, education and employment opportunities, and the economic effects of extralegal activities in the ghetto. The final part of the course consists of a critical analysis of different proposed solutions such as black capitalism, community-owned cooperatives in the ghetto, and a radical shift in both public and private priorities. Prerequisite: Economics 11, 12.

Three credit hours.

ECONOMICS 298.

Econometrics.

This course introduces the statistical measurement and testing of theoretical economic relationships. It will begin with a review of simple linear regression, correlation and hypothesis testing through multiple regression and parameter estimation in simultaneous economic models. Economic applications are emphasized throughout. Prerequisites: Economics 152, 197.

Three credit hours.

DEPARTMENT OF

Education

Assistant Professor: Harman

Instructors: Barondes, Maguire (*Acting Chairman*)

To meet the needs of those students who wish to become secondary school teachers upon graduation or thereafter, the Department of Education offers a number of courses in education to sophomores, juniors, and seniors. Each student should consult periodically with the Chairman of the Department to plan the development of his course program. The program is, in practice, geared specifically to the requirements for teacher certification on the secondary level in Massachusetts.

EDUCATION 61.

Adolescent Psychology.

This course is a study of behavior arising from the problems proper to that period of transition from childhood to maturity. *Three credit hours.*

EDUCATION 62.

Principles of Guidance.

This course introduces the future teacher to the area of guidance in the schools. It gives the student an acquaintance with the various subdivisions of guidance, such as counseling, the use of educational and occupational information, group guidance, and testing. It is also geared to helping the prospective teacher decide whether the area of guidance as a future specialization may be of interest to him. The course explores, by means of reading and discussion, a number of topics of current and perennial importance as areas of concern for the guidance worker. *Three credit hours.*

EDUCATION 67.

Educational Psychology.

The student is introduced to many of the relationships existing between psychology and education. The topics of growth and development, the nature of the learner, the teaching-learning process, and the role of the teacher in the widest development of the child, are studied. This course is a prerequisite for Education 70 and 72. New and innovative approaches to education will be discussed, particularly from a psychological point of view. *Three credit hours.*

EDUCATION 75.

Principles and Methods of Secondary School Teaching.

The Methods of Teaching course experience will be grounded in a perennialist philosophy of education and hence will deal with the theory and techniques of humanistic education, values teaching, and the existential classroom. In an attempt to clarify contemporary education's obsession with reductionism and objectivity, the readings and experiences will emphasize wholeness, subjectivity, and intentionality. *Three credit hours.*

EDUCATION 78.

Curriculum Development.

An introduction to the principles of the secondary school. Curriculum considered historically, theoretically, and practically. This course will follow a workshop approach and focus on problems facing the future student teacher.

Three credit hours.

EDUCATION 200.

Special Topics in Education.

Tutorial and research projects designed by students and faculty members. Admission determined by evaluation of proposal.

Three credit hours.

EDUCATION 268.

Philosophy of Education.

This course is designed to provide an opportunity to study some of the more significant contributions of U.S. culture to contemporary educational philosophy. Although a variety of disciplines will be drawn upon as an informational base for the study, the emphasis will be on a normative appraisal of selected cultural phenomena. The method will be that of philosophical interpretations and the goal will be humanistic and interpretive understanding.

Three credit hours.

EDUCATION 272.

Student Teaching.

A strictly supervised program, for selected students, of observation and teaching in a secondary school. Education 67 is a prerequisite, and Education 75 is strongly recommended. This course will be counted as two ordinary college courses.

Six credit hours.

DEPARTMENT OF

English

Professors: E. F. Callahan, Macris

Associate Professors: Dorenkamp, (Chairman), Healey, Mayer, L. J. McCarthy, Reilly

Assistant Professors: Dailey, Devlin, Geracht, Lawler, Madden, B. E. McCarthy, Teichgraeber, Wilson

Instructors: R. Burke, J. Carroll, Hathaway, Klotz, Roginski

Lecturer: Donaghy

Visiting Assistant Professor: McLean

The English courses offered to all students on an elective basis in their Freshman year are designed to introduce a wide range of academic considerations extending from varying forms of literary analysis to the examination and perfection of the modes of literary expression. Courses in the novel, poetry, and dramatic literature are designed to acquaint the student with the unique methods and approaches to critical reading of these genres. Advanced expository writing courses are designed for Freshmen of advanced writing ability and are limited to no more than 10 students in any given section each semester.

Upper division electives available to Sophomores, Juniors, Seniors and Advanced Placement Freshmen present differing approaches to the study of literature. Thus the student may elect courses consonant with his interests and vocational needs leading to graduate study, law, medicine, business or other fields. A major portion of the courses emphasize the development of critical judgment based upon a sound understanding of the historical tradition. Opportunities are also provided for the student to increase his mastery of creative interests through a series of elective courses in writing.

ENGLISH MAJORS

The English major is expected to plan his course of studies under the close supervision of his departmental advisor. In his Freshman year he may elect no more than one introductory course a semester. Students granted whole or partial advanced placement by the department may select, if they so desire, upper division elective courses.

All English majors are required to take two semesters in classics prior to graduation. It is strongly recommended that this requirement be undertaken as early as possible in the student's career and must be completed prior to the second semester of the Senior year.

The English major is required to elect within his Sophomore, Junior and Senior years a total of ten one semester upper division courses. (English premedical students are required to elect eight excluding Freshman English.) The average four-year course load in English should be, if the student has taken English courses in the Freshman year, twelve courses (premedical ten). For special reasons, with the approval of the department chairman a student will be allowed to enroll in a maximum of fourteen courses.

English majors with permission of the chairman and the schools involved may undertake courses at other schools in the Worcester Consortium. Courses taken in this cooperative venture count fully toward the completion of the English major.

NON-MAJORS

Since September 1967, the English Department has offered two to three electives per semester exclusively for non-English majors. Although non-majors are free and encouraged to elect within the standard offerings in the department, these courses will be reserved for them, in order that they may have the opportunity of preferential election in certain areas. The offerings will change yearly so that in the upper division years, the non-major will have an opportunity over three years of selecting from a broad spectrum of electives.

Broad survey courses (English 160, 161, 180, 181) are open to Advanced Placement Students, non-majors and Sophomore English majors only.

FRESHMAN HONORS

In cooperation with the Honors Program, the English Department offers each semester a Freshman seminar on a different subject, literary approach, or period in English literature. An announcement of the subject is made in the Special Studies bulletin distributed in the summer preceding the student's Freshman year. Application for this Honors seminar is effected through the Office of Special Studies.

Acceptance into the program is announced by the seminar teacher after consultation with the English Department.

ADVANCED PLACEMENT

The English Department participates in the national and college Advanced Placement Programs. Prior to the student's entrance into the Freshman year, the department consults advanced placement scores, high school preparation, and college entrance scores to determine the level of English advisable for the student to take in his Freshman year. In certain cases, students with outstanding achievement are allowed to elect upper division courses (English 100-199) in their Freshman year.

ENGLISH 11.

Advanced Composition.

A course devoted exclusively to refining the students' established mastery of composition techniques through writing and critical analysis. Classes will be made up of a maximum of ten students and intensive work during the semester will be focused upon close work between the student and the teacher in the perfecting of writing skills. *Three credit hours.*

ENGLISH 12.

Introduction to Fiction.

A generic study of the various forms of prose fiction ranging from the short story through the novella and the novel. Extensive reading in a broad variety of sources will focus upon the students' mastery of the critical techniques for analysis of this genre. *Three credit hours.*

ENGLISH 13.

Introduction to Poetry.

A course focusing on extensive reading of poetry and the development of the students' abilities to understand and analyze in detail the various poetic forms. *Three credit hours.*

ENGLISH 14.

Introduction to Dramatic Literature.

A critical approach to the literary genre of the drama with emphasis placed upon the various dramatic techniques and developing modes of critical analysis. *Three credit hours.*

ENGLISH 40.

Freshman Honors Seminar.

A one semester seminar for advanced students on a subject designated each semester by the teacher involved. Application to this course is made through the Office of Special Studies. *Three credit hours.*

ENGLISH 102.

Anglo-Saxon Literature.

A survey of the writings in England between the 7th and 11th centuries; beginning with the Anglo-Latins, and progressing through the popular, courtly, religious, and heroic traditions in poetry. Emphasis is given to the poetic forms and especially to the heroic work, *Beowulf*. The literature is read in translations, but provision is made for students with a reading knowledge of Anglo-Saxon. *Three credit hours.*

(Not offered 1971-72)

ENGLISH 104.

Early English Drama.

A study of the development of the English drama from its continental beginnings to the first regular comedies and tragedies of the early Tudor dramatists. *Three credit hours.*

(Not offered 1971-72)

ENGLISH 106.

Middle English Literature.

A study of *Troilus and Criseyde*, *Gawain and the Green Knight*, religious and secular lyrics and other texts of the 13th and 14th centuries. *Three credit hours.*

ENGLISH 108.

Chaucer.

A reading and critical discussion of the complete text of the *Canterbury Tales* with subsidiary studies in the minor works. *Three credit hours.*

ENGLISH 109.

Special Problems in Early English Literature.

A special course offered periodically for the examination of one form, theme or author in the Medieval period. *Three credit hours.*

ENGLISH 110.

Readings in Renaissance Prose, 1513-1642.

A study of prose forms characteristic of the intellectual climate of the English and Continental Renaissance, in particular the history, dialogue, philosophical polemic, and moral and familiar essay. Consideration will also be given to the development of English prose style from More to Bacon. *Three credit hours.*

ENGLISH 111.

English Renaissance Poetry of 16th Century.

A survey of the major poets of the century, with a few of the lesser figures. After Skelton's satiric verse, the course concentrates on the lyric and pastoral tradition down to Spenser, Marlowe, Sidney, and Shakespeare. *Three credit hours.*

ENGLISH 115.

Tudor Stuart Drama.

The purpose of the course is to treat the important Elizabethan dramatists apart from Shakespeare; from Marlowe to Shirley. *Three credit hours.*
(Not offered 1971-72)

ENGLISH 116.

Shakespeare Survey.

A one semester survey of the major works of Shakespeare, examining them as representative of the stages in Shakespeare's dramatic development.

Three credit hours.

ENGLISH 117.

Shakespeare's Elizabethan Drama.

A careful study of Shakespeare's drama prior to 1600. Major attention will be focused upon the Chronological Tetralogies. Corollary studies in the tragedies and comedies will be undertaken also.

Three credit hours.

ENGLISH 120.

Shakespeare's Jacobean Drama.

A close analysis of Shakespeare's dramas from *Hamlet* to *The Tempest*. Emphasis will be placed upon stylistic development and Shakespeare's addressing himself to problems of the Jacobean age.

Three credit hours.

ENGLISH 121.

English Poetry, 1600-1660.

A study of the two major traditions of the period, Jonson and the Cavaliers, Herrick, Carew, Suckling, and Lovelace, with greater emphasis on Donne and the Metaphysicals, Herbert, Crashaw, Vaughan, and Marvel. *Three credit hours.*

ENGLISH 122.

John Donne.

A close analysis of the writings of John Donne. Readings from his contemporaries in literature, politics, and philosophy will be studied in an attempt to establish the milieu of Donne's writing.

Three credit hours.

(Not offered 1971-72)

ENGLISH 125.

Milton.

This course proceeds from a study of Milton's early poems to the readings of *Paradise Lost*, *Paradise Regained*, and *Samson Agonistes*. Certain prose pamphlets are read either in their entirety or in selections.

Three credit hours.

ENGLISH 129.

Special Problems in Early 17th Century Literature.

A special course offered periodically for the examination of one form, theme or author in the 17th century.

Three credit hours.

ENGLISH 131.

Restoration and 18th Century Drama.

The course will survey drama from Dryden to Sheridan, including heroic drama, Restoration comedy, sentimental developments of the 18th century, and the reemergence of laughing comedy. Attention will also be paid to relevant intellectual background and influences.

Three credit hours.

ENGLISH 132.

Dryden, Pope and Swift.

A study of the literature from the Restoration to the death of Pope with major emphasis upon the writings of John Dryden, Jonathan Swift, and Alexander Pope.

Three credit hours.

ENGLISH 135.

Johnson and the Late 18th Century.

This course (which omits the novel) acquaints the student with Collins, Gray, Boswell, Johnson, Christopher Smart, Macpherson, Churchill, Walpole, Goldsmith, Sheridan, Beattie, Chatterton, Cowper, Burns, Crabbe, Burke, and Paine and Blake.

Three credit hours.

ENGLISH 137.

18th Century Novels.

A close examination of the novel as formal prose narrative. Novels by Defoe, Fielding, Richardson, Smollet, the Gothic novelists, Sterne and Austen are considered in detail. Collateral reading is also required.

Three credit hours.

ENGLISH 139.

Special Problems in the Restoration or 18th Century.

A special course offered periodically for the examination of one form, theme and author in the 18th century.

Three credit hours.

ENGLISH 141.

The English Romantic Poets.

A study of Romanticism as a movement and a close analysis of the major Romantic writers: Wordsworth, Coleridge, Byron, Shelley, Keats. Readings in the work of Romantic Contemporaries will also be discussed.

Three credit hours.

ENGLISH 145.

Major Victorian Authors.

A study of representative poems of Tennyson, Browning, Arnold and Hopkins; the prose of Arnold and Carlyle: with attention on important changes in critical theory and poetic taste during the period. Selections from Macaulay, Mill, Ruskin, Pater, Rossetti, Swinburne and Hardy will be also examined. *Three credit hours.*

ENGLISH 147.

19th Century Novels.

A close examination of the novel as a formal prose narrative. Novels by Thackeray, Dickens, the Brontes, Eliot, Butler, James, and Conrad are considered in detail. Collateral reading in Scott, the Gothic novelists, Meredith, Trollope, Hardy, and others is also required. *Three credit hours.*

ENGLISH 149.

Special Problems in the 19th Century English Literature.

A special course offered periodically for the examination of one form, theme or author in the 19th century. *Three credit hours.*

ENGLISH 150.

Modern British Literature.

A survey of the major British poets and novelists since 1914. Concentration will be on the works of Yeats, Auden, D. H. Lawrence, Joyce, Aldous Huxley, and the new generation of writers since the close of World War II.

Three credit hours.
(Not offered 1971-72)

ENGLISH 151.

Modern British Poetry.

A study of the major Modern British Poets dating from Hardy, Yeats, Eliot, and Auden will be examined in detail as representative of the directions in British poetry during the 20th century. *Three credit hours.*

ENGLISH 157.

Modern British Novel.

A study of the British novel and its development from Galsworthy to Braine. *Three credit hours.*

ENGLISH 160.

Survey of American Literature I.

A survey of American literature from its Colonial beginnings to the time of Emerson and the Transcendentalists. *Three credit hours.*

ENGLISH 161.

Survey of American Literature II.

A survey course studying the growth of American literature beginning with the Transcendentalists, extending through the Civil War up to the mid-20th Century. *Three credit hours.*

ENGLISH 162.

Colonial American Literature.

A study of the development of American literature from Smith to the American Revolution. Readings in Bradford, Edwards, Mather, Bradstreet and others.

Three credit hours.

(Not offered 1971-72)

ENGLISH 163.

American Literature of the Early Republic.

A study of American writing during the late 18th and early 19th century with emphasis upon Brown, Irving, Cooper, Freneau.

Three credit hours.

ENGLISH 164.

Hawthorne, Melville and Twain.

The detailed analysis of the major works of Hawthorne, Melville and Twain as representative of the writers, the literary tastes and the general cultural movements of the time.

Three credit hours.

ENGLISH 165.

American Literature in the Age of Emerson.

A study of the times and contemporaries of Ralph Waldo Emerson. Readings from Emerson, Thoreau, Hawthorne, Melville, Poe and Whitman.

Three credit hours.

ENGLISH 169.

Special Problems in the 19th Century American Literature.

A special course offered for the examination of special problems, authors, or themes in American literature of the 19th century.

Three credit hours.

ENGLISH 170.

American Literature in the 20th Century.

A survey course in the developments in American literature from the late years of the Genteel Tradition to the present day.

Three credit hours.

(Not offered 1971-72)

ENGLISH 171.

Modern American Poetry.

A close analysis of the development of American poetry from the late 19th Century to the present. Representative poets will be examined.

Three credit hours.

(Not offered 1971-72)

ENGLISH 172.

Contemporary Fiction.

A critical examination of contemporary fiction by British and American writers such as: Kingsley Amis, John Barth, Anthony Burgess, Elizabeth Bowen, John Hawkes, Joseph Heller, Doris Lessing, Norman Mailer, Brian Moore, Iris Murdoch, Thomas Pynchon, etc.

Three credit hours.

ENGLISH 173.

Contemporary Poetry.

A critical examination of contemporary poetry by British and American poets such as: Robert Bly, Allen Ginsberg, Thom Gunn, Phillip Larkin, Denise Levertov, Robert Lowell, James Merrill, Vassar Miller, Sylvia Plath, etc.

Three credit hours.

ENGLISH 174.

Contemporary Drama.

A critical examination of contemporary drama by British and American playwrights such as: Edward Albee, Kenneth Brown, Samuel Beckett, Brendan Behan, Robert Bolt, Shealagh Delaney, Jack Gelber, Lorraine Hansberry, John Osborne, Harold Pinter, N. F. Simpson, Arnold Wesker, etc. *Three credit hours.*

ENGLISH 177.

Modern American Novel.

A study of the development of the modern American novel from the close of the 19th century to the present. Representative works of Wharton, Dreiser, Norris, Dos Passos, Hemingway, Faulkner and others are closely studied for an understanding of their artistic accomplishment and the milieu in which they are written. *Three credit hours.*

ENGLISH 178.

Black Literature in America.

A study of Afro-American Literature during the 19th and 20th centuries. The course will focus upon an analysis of the relationship between Black Literature and the traditional theories of American Literature through close literary analysis of representative texts. *Three credit hours.*

ENGLISH 179.

Special Problems in Modern American Literature.

A special course offered periodically for the examination of one form, theme or author in 20th century American literature. *Three credit hours.*

ENGLISH 180.

Survey of English Literature to 1660.

A survey history of English literature from the time of *Beowulf* to the end of the Puritan Commonwealth. Representative works will be analyzed in their relationship to the development of English literature, as well as reflections of their milieu. *Three credit hours.*

ENGLISH 181.

Survey of English Literature from 1660—To the Present.

A study of the major writings in English literature from the Restoration to the present. Emphasis is placed on literary, cultural and historical movements and their effect on the literature of the time. Open only to sophomore English majors and students not majoring in English. *Three credit hours.*

ENGLISH 182.

Special Problems in the Teaching of English Literature.

An examination of the procedure of critical analyses as they appear in the teaching of English literature. *Three credit hours.*

ENGLISH 184.

Modern Drama.

The focus of this course will be drama since 1890 principally in England. Attention will also be given, however, to developments in the theater, on the continent, and in the United States. *Three credit hours.*

(Not offered 1971-72)

ENGLISH 185.

Twentieth Century Irish Literature.

A survey of the developments in the poetry, drama and fiction of modern Ireland from the Gaelic Revival to the present. Attention will be focused on Yeats, Joyce, O'Casey, and Synge among others. *Three credit hours.*

ENGLISH 186.

Principles and Practice of Writing: Verse.

A study of the techniques of verse for either critical or creative purposes through the study of representative form of poetry (e.g., sonnet, ballad, ode, villanelle, rondel, etc.) and of meters, diction, imagery, and other elements of poetic technique. Practice in composition of representative forms and opportunity for individual creative work will be provided. *Three credit hours.*

(Not offered 1971-72)

ENGLISH 187.

Studies in the Novel.

An inclusive, but non-historical survey of the various approaches to the novel as a literary form. English novels of the 18th and 19th centuries will be studied and compared to similar continental works in the same form. *Three credit hours.*

(Not offered 1971-72)

ENGLISH 188.

Problems in the Modern Novel.

A comparative study of English, American and Continental novels of the 20th century. The directions, forms, and preoccupations of the modern novel will be studied in an investigation of the range of contemporary fiction.

Three credit hours.

ENGLISH 189.

Principles and Practice of Writing: Short Fiction.

A study of the techniques of fiction for either critical or creative purposes through the study of representative forms of short fiction (e.g. anecdote, *novella*, allegory) and of point-of-view, setting, structure, image, diction, plot, characterization, and other elements of fictional technique. Practice in composition of representative modes and opportunity for individual creative work will be provided.

Three credit hours.

(Not offered 1971-72)

ENGLISH 190.

Tragic View.

A study of the theory of tragedy in dramatic and non-dramatic literature. Readings in Greek tragedians, Latin and Continental, as well as English and American literature.

Three credit hours.

(Not offered 1971-72)

ENGLISH 191.

Comic View.

A study of the theory of comedy in drama and other literary forms from the Greeks to the present day.

Three credit hours.

(Not offered 1971-72)

ENGLISH 192.

Satiric View.

A study of the concept of satire as it is found in all literary forms from the classical writers to the present day. *Three credit hours.*

ENGLISH 194.

Literature and Myth.

A study of the mythical bases of selected representative works and an investigation of the current analytical approach referred to as myth criticism.

ENGLISH 195.

Criticism from Aristotle to Johnson.

A study of the major critical movements from Aristotle to Samuel Johnson with emphasis upon the classical theory of literature. *Three credit hours.*

ENGLISH 196.

Modern Criticism.

An examination of twentieth century critical theory including that of such critics as I. A. Richards, Cleanth Brooks, Kenneth Burke, T. S. Eliot, Northrop Frye, etc. *Three credit hours.*

ENGLISH 197.

Problems of Rhetorical Analysis.

A systematic study of classical and modern systems of rhetorical analysis of expository prose. *Three credit hours.*

ENGLISH 198.

Introduction to Linguistics.

A general introduction to the science of linguistics including phonetics, phonemics, morphology, and syntax. *Three credit hours.*

ENGLISH 199.

Comparative and Historical Linguistics.

The emphasis of the course is on linguistic geography, linguistic borrowing, the causes of linguistic change, the comparative method and reconstruction, and problems in analyzing languages with and without literary tradition. *Three credit hours.*

ENGLISH 200 SECTIONS.

Special Approaches.

The designation 200 refers to the method in which the subject is pursued on either a seminar, tutorial or independent study basis. Students desiring to undertake such studies must first receive the permission of their departmental advisor and then the recommendation of the mentor of the project prior to the submission of a detailed prospectus to a departmental committee for final decision.

ENGLISH 300.

This category designates courses offered which cross departmental lines.

DEPARTMENT OF

Fine Arts

Associate Professor: Culley

Assistant Professors: Italiano, Reardon, Scannell (Chairman), Schwager

Lecturer: Elliott

Visiting Lecturers: Baker, Levinson, Raguin, Waldbauer

The Fine Arts curriculum is deliberately designed as an integral part of the liberal arts program of the College rather than as a terminal training program for professional work. Its aim is to increase student sensitivity to the visual arts, to refine the powers of critical analysis in the same arts, and to provide the student with visual means of creative expression. It follows that those who seek professional competency would be expected to pursue the field in graduate school; it is also to be concluded that the courses are not limited to those majoring in fine arts. They are open to all students, in some cases as a minor related to their major field, and in all cases as free electives.

Requirements for the *major*:

- a) Emphasis on Studio
F.A. 121, 122 Studio Drawing
F.A. 101, 102 History of Western Art.
Six semesters in studio courses.
- b) Emphasis on Art History
F.A. 141, 142 Studio Painting.
Six semester courses in art history.
Students who plan to apply to graduate schools in art history should be aware that they will be expected to have competence in French, German, and Italian.

FINE ARTS 101.

History of Western Art I.

The architecture, sculpture and painting of ancient civilizations. Beginning with Egypt and Mesopotamia,, following the developments in the major arts on to Minoan and the major Greek periods—archaic, Hellenic, and Hellenistic. Then the Roman contributions, followed by the Early Christian, Romanesque and Gothic. The study of painting begins to get major emphasis with the development of the manuscript traditions.

Three credit hours.

FINE ARTS 102.

History of Western Art II.

Not neglecting architecture and sculpture, the emphasis in this semester is on painting, proceeding from the Byzantine and medieval styles through the various stages of the Renaissance and Baroque; their diffusion through Spain, France, Germany, Holland and Flanders. Also considered are French Neo-classicism, Romanticism, and Realism, the rise of Impressionism, Expressionism, and the various schools of painting in the twentieth century. *Three credit hours.*

FINE ARTS 111.

History of Oriental and African Art.

A basic understanding and knowledge of Oriental art (China, Japan, Korea, Central Asia, Southeast Asia, and India), from the third millennium B.C. to the present. Aimed not only at clarifying the information from this area of study but also at discussions of its problems. Due to the vast range of the subject, it is hoped that the student will develop an understanding of the broad course of Eastern history, and especially how the art of the area reflects that history. Also the traditions and backgrounds necessary for an understanding of African art.

Three credit hours.

FINE ARTS 113.

History of American Art.

A depth course covering architecture from its colonial beginnings to the recent developments of Wright, Johnson, Saarinen and others. In the fields of sculpture and painting, the major artists from the early limners, through the Federal and later eclectic periods. Also the various movements from 1945 to the present are considered in their ideological and aesthetic roots.

Three credit hours.

FINE ARTS 116.

History of Modern Painting.

Beginning with the revolt of David from the previous academic traditions, this course traces the multiple movements and ideologies that have taken place in the last century. The emphasis in the course is on the many painting styles and underlying philosophies, but modern sculpture and architecture are also treated.

Three credit hours.

FINE ARTS 119, 120.

Fundamentals of the Visual Experience.

Lectures on the visual elements of the object in investigating sensitivity to traditional and contemporary form. Discussions, slides and student participation in such areas as: design qualities as the reflection of philosophies of a specific age; substantial effect of materials on expression in the end product; basic connections between material and creative intuition; the impulse to create in visual and other arts; interrelations of the arts today; where we stand and where we are going in the arts today. Emphasis is on awareness of a given environment and developing abilities to perceive and construct relationships among various and disparate areas of experience. Open only to majors (or non-majors with adequate background).

Six credit hours.

(Not offered 1971-72)

FINE ARTS 121, 122.

Studio Drawing.

Gradual progression in both dry (pencil, conte, pastels, crayon) and wet (pen and ink, Japanese brush, magic marker, watercolor) techniques. The purpose is to inves-

tigate the special properties of line, volume, texture and color by the interaction of different tools on different surfaces. The importance of the art of drawing as an end product in itself, and as the preliminary necessity in the visualization and execution of a mental image. Informal discussions and slides on draughtsmanship through history.

Six credit hours.

FINE ARTS 131, 132.

Printmaking.

The methods of producing multiple art. Investigation of their special characteristics, advantages and drawbacks. Techniques include linocut, woodcut, collograph, stencil, silkscreen, found object, monotype, tire relief, other experimental techniques (also, tentatively, drypoint, engraving, etching, lithography). Informal discussions and slides on the history of printmaking, the resurgence of the print today, its relation to the new realms of advertising art. F.A. 121, 122 required for majors; strongly recommended for non-majors.

Six credit hours.

FINE ARTS 141, 142.

Studio Painting.

An exploration of the fundamental techniques of drawing and painting involving the elements of form, space, value, and color. In the first semester, emphasis is placed on the organization of space by the use of line, form, shape, and pattern. Studies and exercises are undertaken in pencil, ink and wash, pastel, oil and polymer painting. The second semester continues the development of visual organization and technical proficiency in the major techniques of painting involving landscape, still life, figure, abstract, and non-objective subject matter. Special projects and background reading assignments augment studio lectures, demonstrations, and work projects.

Six credit hours.

FINE ARTS 152.

Watercolor.

A studio course in watercolor processes which explores the procedures and techniques of transparent watercolor, gouache and other related water-soluble mediums. Stress is placed on the unique qualities of the watercolor technique within the framework of the individual's personal creative development.

Three credit hours.

FINE ARTS 161.

Basic Sculpture.

A studio course which introduces the student to a creative understanding of three-dimensional design, form, and the control of techniques and materials involved. Personal expression is encouraged through the use of a variety of modeling and sculpture media including clay, plaster, cement, wood, metal, and plastics. Principles of three-dimensional design, analysis and synthesis of form are explored with figurative and abstract subject matter.

Three credit hours.

FINE ARTS 162.

Carving and Casting.

Continues individual development and understanding of three dimensional design and form while concentrating on the techniques of wood carving, stone carving and/or casting in plaster, cast stone and terra cotta. Prerequisite: Fine Arts 161.

Three credit hours.

FINE ARTS 164.

Ceramic Sculpture.

Continues individual development and understanding of three-dimensional design and form while concentrating on the technical problems involved in making ceramic sculpture. The student becomes familiar with hollow building, coil and slab construction and wheel thrown work as well as learning firing procedures and glazing. Prerequisite: Fine Arts 161. *Three credit hours.*

FINE ARTS 166.

Metal Sculpture.

Continues individual development and understanding of three-dimensional design and form while concentration is on the various metal techniques of hammering, forming, fusing and construction. Construction and fusing will be done at a variety of temperatures ranging from soft soldering up through silver soldering to welding and brazing. Prerequisite: Fine Arts 161. *Three credit hours.*

FINE ARTS 170.

Contemporary Cinema and Humanism.

A film seminar directed toward an investigation of the cinematic treatment given the many-sided problems confronting modern man. Approximately ten representative contemporary films, both foreign and domestic, are closely and critically studied for an understanding of their artistic accomplishment and their director's place in the history of the cinema. *Three credit hours.*

FINE ARTS 180.

Structure of Music (offered both semesters).

This course is designed primarily for students without previous musical training. It is aimed at an understanding of music as an aural experience, and does not require the ability either to read music or to perform it. The training consists in listening to, and understanding certain compositions which illustrate the most important techniques used in Western music. *Three credit hours.*

FINE ARTS 181, 182.

Fundamentals of Music.

This two-semester course is designed for students without previous musical training who wish to pursue the study of music on a more serious level. The course itself will consist in the study (from actual compositions) of elementary harmony and counterpoint. It will also include training in sight-singing, ear-training, and at least an introductory study of the piano, since some competence at playing the latter is necessary for further studies in music. *Six credit hours.*

FINE ARTS 183, 184.

Fundamentals of Music.

This two-semester course is a continuation of the previous one, which it has as a prerequisite. It will include the study of, and exercise in, advanced harmonic practices and counterpoint (all based on actual works), as well as the influence of these practices on formal procedures in Western music up to the present. *Six credit hours.*

FINE ARTS 190.

Variations

An investigation of the history of music in the Western World, through a study

of variation techniques. Styles, or ways of composing, will be studied through an analysis of music using variation techniques from early medieval music to the present (20th century).
Three credit hours.

FINE ARTS 191.

The Music of Hayden and Beethoven.

This course will deal with the music of the above composers with particular emphasis on the art forms new to the Classical period, i.e. the symphony, the string quartet and the piano sonata. Classroom discussion will be based only on listening assignments and selected reading.
Three credit hours.

FINE ARTS 192.

The Operas of Mozart, Verdi and Wagner.

Three different conceptions of opera and operatic method will be studied in detail with particular emphasis on Mozart's *Don Giovanni*, Verdi's *Othello*, and Wagner's *Tristan and Isolde*.
Three credit hours.

FINE ARTS 193.

The Music of Schumann, Chopin and Brahms.

The music of the above composers will be discussed with an attempt at separating those aspects of their style that represent a continuation of the classical tradition from those that are new to the Romantic Era.
Three credit hours.

FINE ARTS 194.

Chamber Music.

A one semester course devoted to the investigation of works for small ensemble (one singer or player to a part). Examples will be selected mainly from the instrumental literature of the seventeenth through the twentieth centuries.
Three credit hours.

FINE ARTS 195.

The Music of Monteverdi, Handel and Bach.

A study of baroque music through an investigation of major works of the three most important composers of the baroque era. . . . with special reference to their dramatic compositions.
Three credit hours.

FINE ARTS 201, 202.

Special Projects.

Tutorial work under departmental direction, suited to needs and interests of the student.
Six credit hours.

FINE ARTS 221, 222.

Advanced Studio Drawing.

Continuation of exercises in hand-eye coordination and conversion of three-dimensional space to the flat plane; with experimental techniques and awareness, through drawing, of peculiarities of style in the past and present. Prerequisite: F.A. 121, 122.
Six credit hours.

FINE ARTS 241, 242.

Advanced Studio Painting.

This course continues individual development in the major painting techniques and encourages investigation in some of the less common modes of visual expression.

Emphasis is placed on the complex and evolving dynamics of space organization as well as the development of personal technical skills. Traditional and contemporary styles of painting become a vital part of the student's growth through special assignments, readings, and studio projects. Prerequisite: Fine Arts 141, 142.

Six credit hours.

FINE ARTS 261, 262.

Advanced Modeling and Sculpture.

Continues and expands the fundamental concepts of three-dimensional design and form-structure inherent in contemporary and traditional approaches to sculpture. The expressive and organizational possibilities of figurative and abstract form are explored by means of individual and group projects involving constructions, modeled and direct built forms, and carving techniques. Methods of casting in plaster, cement, metal, and aggregates are further developed. Special projects and reading assignments supplement lectures, demonstrations, and work projects in the studio. Prerequisite: Fine Arts 161, 162.

Six credit hours.

DEPARTMENT OF

History

Professors: Corcoran, Reidy

Associate Professors: Brandfon, J. Flynn, W. Green, Kealey, Kinsella, O'Brien, Powers, Schiff, Wall (*Chairman*)

Assistant Professors: Beales, Holmes, Lapomarda

Instructors: John Anderson, Moggio, Scully

Lecturer: Shea

Visiting Lecturer: Madzongwe

Historical knowledge provides the means of understanding another age or society or a culture other than one's own, of entering fully into the life of the past, of knowing its presuppositions, outlook and spirit, and of learning how to interpret it. History establishes perspective as a defense against excessive "presentism," frees us from preconceptions, and enables us to place ourselves, in the atomic and space era, in relation to other individuals, societies and ages. Basically humanistic, with all civilization for its province, by its very character history is the bridge between the humanities and the sciences.

To major in history, members of the classes of 1972 and 1973 must have a minimum of ten one-semester courses in history, including whatever course they may have taken as freshmen. Members of the classes of 1974 and 1975 must have a minimum of eight one-semester courses in history, exclusive of History 1, 2 or History 3, 4. In addition, members of the classes of 1974 and 1975 must see to it that among these courses are at least two one-semester courses in American History and at least two in European History. For all classes, a maximum of fourteen semester courses may be taken in history, including History 1, 2 or History 3, 4.

All freshmen who choose to take a course in history enroll in a special course, History 1, 2 or History 3, 4. Only Freshmen who have qualified for Advanced Placement may take history courses other than History 1, 2 or History 3, 4. Seminars may be taken only by history majors who have completed at least four semester courses in history, exclusive of the freshman courses.

Honors students are afforded opportunities to participate in seminars and research projects by arrangement with the department.

HISTORY 1, 2.

Conference course for Freshmen.

A reading and discussion course in which small groups of students study in depth selected topics and themes in history. Meeting once each week for an extended period, this course seeks to develop a sense of history. *Six credit hours.*

HISTORY 3, 4.

Introduction to History for Freshmen.

A course in which freshmen study in depth selected topics and themes in history.
One lecture and one discussion period each week. *Six credit hours.*

HISTORY 13, 14.

Europe Since 1500.

A study of the significant developments in European History from the sixteenth century to the present time. *Six credit hours.*

History 33.

Ancient Near East.

A rapid survey of the civilizations of the very ancient world with particular emphasis on Egypt and Mesopotamia. *Three credit hours.*

(Not offered 1971-72)

HISTORY 41.

History of Greece.

This course is offered by the Department of Classics as Classics 157. *Three credit hours.*

HISTORY 42.

History of Rome.

This course is offered by the Department of Classics as Classics 158. *Three credit hours.*

HISTORY 43, 44.

The Early Middle Ages.

A close examination of the historical and institutional changes which saw medieval Europe evolve from a late Roman foundation. Christianity, Roman civilization and the Germanic invader are studied with the objective of understanding their critical interaction and its influence upon the new beginnings of Western man.

Six credit hours.

(Not offered 1971-72)

HISTORY 49, 50.

Medieval History.

An examination of Western History from the decline of the Ancient World until the Renaissance and Reformation era, with emphasis upon political, social and economic developments. *Six credit hours.*

(Not offered 1971-72)

HISTORY 51, 52.

Europe in the Nineteenth Century.

Napoleonic Era; Congress of Vienna, Political and Social Revolutions; Unification of Germany and Italy; Russia; the British Empire; Social Theories.

Six credit hours.

HISTORY 53, 54.

Europe in the Twentieth Century.

The causes of World War I; the Versailles Treaty; the League of Nations; Russia

and Bolshevism; Nazism, Fascism; the Far Eastern Situation; the Spanish War of 1936; World War II.

Six credit hours.

(Not offered 1971-72)

HISTORY 61, 62.

History of Western Political Thought.

Analysis of the political thought of western civilization from Ancient Greece to the present. Readings in the first semester include works of Plato, Aristotle, Cicero, St. Augustine, St. Thomas, John of Salisbury, John of Paris, Marsilius of Padua, and Machiavelli. Readings in the second semester include the works of Hobbes, Locke, Montesquieu, Rousseau, Burke, Hegel, Marx, and Marcuse. Lectures are based on text, commentaries and historical sources. They attempt to draw out the significance of the various writers for their own time and for our own.

Six credit hours.

HISTORY 63.

Modern East Central Europe.

This course traces the development of Poland, Czechoslovakia, Austria, Hungary, and the Balkan states. Approximately equal stress is given to each of the following: the historical foundations to 1815, the nineteenth century through World War I, the inter-war period, World War II and the Soviet satellite empire.

Three credit hours.

HISTORY 71.

History of England I.

A detailed survey of the political, social, cultural, and intellectual history of Britain from the prehistoric Beaker people through the Romans, Saxons, and Normans to the age of Elizabeth I.

Three credit hours.

(Not offered 1971-72)

HISTORY 72.

History of England II.

A continuation of History 71, emphasizing religious, political, economic, and cultural factors from Elizabeth I to the outbreak of World War II. A brief analysis of the period since 1939 is also given.

Three credit hours.

HISTORY 73.

History of Russia to 1917.

A survey of the economic, social, religious, political and cultural history of the Russian people from the period of ancient Kiev to the revolutions of 1917.

Three credit hours.

HISTORY 76.

Pre-Columbian America.

A rapid survey of the civilizations flourishing in this hemisphere in the centuries before Columbus. Special attention will be given to the Olmecs, Inca, Aztecs, American Indian (Pueblo and Hopewell cultures), and the Viking settlements. Field trips will be required.

Three credit hours.

HISTORY 77, 78.

History of Latin America.

A study of the colonial and national histories of Latin American Republics. An

examination of the role of Latin America in the Modern World will be included during the second semester. *Six credit hours.*

HISTORY 95, 96.

Modern Far Eastern History.

This course seeks to give the student an appreciation of a great civilization radically different from our own, and a clearer understanding of the complex problems of the Far East and of American policy there. The focus is on China and Japan, but Korea and Southeast Asia are also included. Special attention is devoted to Asian thought, the emergence of democracy, intellectual developments and Communism. *Six credit hours.*

HISTORY 101.

The English Colonies in North America, 1609-1763.

The transplantation and transformation of European institutions and values in a New World, the growth of a distinctive Anglo-American society in North America. *Three credit hours.*

HISTORY 102.

The Age of the American Revolution, 1763-1800.

Revolution and independence in the context of English and Anglo-American ideas and institutions; the collapse of imperial ties, the ideology of revolution, the new constitutions, the beginnings of political parties in the 1790s and the debate over the French Revolution. *Three credit hours.*

HISTORY 103, 104.

American Political History in the Nineteenth Century.

A study of the political parties, personalities and issues which influenced the course of American politics in the nineteenth century. The first semester will consider the period to 1850; the second, the period from 1850-1900. Among the topics considered in the first semester: the origin of parties, the Jeffersonian system, the Era of Good Feelings, and Jacksonian Democracy. Among the topics considered in the second semester: politics and the coming of the war, Reconstruction, the era of the spoilsmen, and the beginning of reform. *Six credit hours.*

(Not offered 1971-72)

HISTORY 105, 106.

The United States in the Twentieth Century.

A study of the salient political, social, economic and cultural developments in the history of the United States from the end of the nineteenth century to the recent past. Each semester selected problems of particular importance will be given special consideration. *Six credit hours.*

HISTORY 107.

19th Century U.S. Diplomatic, 1775-1898.

A study of the foundations and development of American diplomacy from the American Revolution to the Spanish War. *Three credit hours.*

HISTORY 108.

20th Century U.S. Diplomatic, 1898-1970.

A study of the foreign policies and relations of the United States with respect to

Europe, Latin America, Canada, the Middle East, Africa, and Asia with an emphasis on the American presidents and their secretaries of state.

Three credit hours.

HISTORY 109, 110.

The American Westward Movement.

A two semester course dealing with the story of the conquest of the American continent and its appropriation to the uses of civilized man. *Six credit hours.*

(Not offered 1971-72)

HISTORY 111, 112

American Social and Intellectual History.

An exploration of the development of the American mind under the impact of political, economic, and social changes. *Six credit hours.*

HISTORY 113.

History of the American South, 1607-1850.

History of the South with emphasis on the development of a particular sectional conscience. The course will deal with the political, cultural, economic, religious, racial and literary aspects of Southern life as distinct from the national pattern.

Three credit hours.

(Not offered 1971-72)

HISTORY 114.

History of the American South, 1850 to the present.

History of the South as it faced the national challenge. Particular emphasis will be placed on the challenge to rural provincialism on the part of the growing forces of industrialism and the federal government.

Three credit hours.

(Not offered 1971-72)

HISTORY 115.

American Historiography.

The writings of American history will be considered as a part of American intellectual history, with attention to the work of major historians and to the reception and interpretation of their ideas by groups in American Society.

Three credit hours.

(Not offered 1971-72)

HISTORY 116.

Religion and Society in America.

An examination of the role of religion in American history with particular attention to the relationship between religion and social reform. *Three credit hours.*

HISTORY 117.

The Emergence and Development of Industrial and Urban America, 1820-1929.

An examination of the stirrings of industry in the U.S. in the four decades before the Civil War, its flowering in the years between 1865 and 1900 and the changes that it experienced during and after World War I. Emphasis will be placed upon the effects of industrialization upon the life of the nation: the phenomenal growth of cities and the problems connected with them, immigration, the growth of labor unions, the climate of violence which characterized the struggle between capital

and labor and the intellectual attempts to defend and challenge the advancement of industrial capitalism.

Three credit hours.

(Not offered 1971-72)

HISTORY 118.

The Reform Impulse in America.

An examination of the several reform movements in the American experience with particular attention given to the "humanitarian" strivings of the years between 1820 and 1940, Populism, Progressivism, and the New Deal. Emphasis will be placed upon uncovering the social, political, economic, cultural, and intellectual factors involved in these crusades, particularly the latter. An attempt will also be made to place the American reform experience within the context of European reform.

Three credit hours.

HISTORY 119.

History of American Radicalism.

This course will examine in detail the development of American radicalism with particular attention to the interaction of native currents with theories of society imported from Europe.

Three credit hours.

HISTORY 124.

Constitutional and Legal History of England.

Origin and development of the parliamentary system and the common law.

Three credit hours.

HISTORY 125.

Tudor England, 1485-1603.

This course emphasizes religious, political and economic factors from the beginning of the reign of Henry VII to the end of the reign of Elizabeth I.

Three credit hours.

(Not offered 1971-72)

HISTORY 126.

Stuart England 1603-1714.

This course emphasizes religious, political and intellectual factors from the beginnings of the reign of James I to the end of the reign of Anne. *Three credit hours.*

HISTORY 127.

Hanoverian England, 1714-1815.

A study of the religious, political, economic, and intellectual factors in English history from the accession of George I to the Congress of Vienna.

Three credit hours.

HISTORY 129, 130.

England and the British Empire, 1815 to the present.

This course examines both the internal and imperial development of Great Britain from the conclusion of the Napoleonic wars to the establishment of the welfare state. Emphasis will be given to the social changes stimulated by rapid industrialization: to the democratization of British politics; to the decline of the old West Indian empire and the rise of new holdings in Africa and Australasia. Britain's involvement in the politics of Europe and the Crimean, Boer, and world wars will receive stress. The economic strain of world leadership, the transition from empire

to commonwealth, and the development of nationalism in overseas dependencies will be treated.

Six credit hours.

(Not offered 1971-72)

HISTORY 133.

France under the Old Regime.

Political, social, economic, intellectual, and religious developments from the Age of Louis XIV to the French Revolution. Emphasis is placed on the structure of society, the struggle for empire, and the Enlightenment.

Three credit hours.

HISTORY 134.

The Era of the French Revolution and Napoleon.

Domestic and foreign developments with emphasis on the nature, extent and significance of the era.

Three credit hours.

HISTORY 135.

France, 1815-1870.

Foreign affairs and domestic political, social, economic, intellectual and ecclesiastical problems from the Restoration through the Second Empire.

Three credit hours.

(Not offered 1971-72)

HISTORY 136.

The Third French Republic.

France 1870-1940 with emphasis on political constitutional and economic developments; Church and State, political and social thought; imperialism and foreign relations.

Three credit hours.

(Not offered 1971-72)

HISTORY 137, 138.

The Fifth French Republic.

An intensive study of French post-war society, the performance of the Fourth Republic, Algerian problem, the emergence of the new system, de Gaulle's record and legacy, and some speculation about France's future.

Six credit hours.

HISTORY 141, 142.

The High Middle Ages.

A study of how two conceptions (the changing values of feudalism and the growth of a reformed Papacy) combined to create a new Medieval World based on increasingly strong monarchies (England and France) and heightened intellectual speculation (St. Anselm, the rise of the universities). Rome, the Empire, England and France are the focal points in this study which will stress source readings and independent investigation.

Six credit hours.

HISTORY 143.

Byzantium and Islam.

A detailed examination of those great competing civilizations and cultures down to 1453.

Three credit hours.

(Not offered 1971-72)

HISTORY 144.

The Crusades.

An examination of these long-distance campaigns and their impact on the relationship between the Near East and the emerging states of the Medieval West from the battle of Manzikert in the eleventh century to the fall of Acre in 1291. Readings will emphasize Western, Greek and Oriental points of view as seen in both primary and secondary sources.

Three credit hours.

(Not offered 1971-72)

HISTORY 145.

Medieval Towns.

The re-emergence of towns and the middle class in Western Europe, ca. 1000 to 1300, and the attendant effects of renewed urbanism upon European history.

Three credit hours.

(Not offered 1971-72)

HISTORY 146.

Medieval and Renaissance Spain.

The medieval evolution of political, institutional and economic unity in the Iberian Peninsula, and the culmination of Spain as a world power in the sixteenth and seventeenth centuries.

Three credit hours.

(Not offered 1971-72)

HISTORY 147, 148.

Renaissance-Reformation.

A survey of the major intellectual and social currents in Europe between 1250 and 1600. Reading of source materials will be stressed.

Six credit hours.

HISTORY 152.

History of the Soviet Union.

A study of the development of Russia from the Bolshevik revolution of 1917 to the present day.

Three credit hours.

HISTORY 153.

Imperial Russia 1700-1825.

This course examines the development of Russia under the tsarist autocracy, from Peter the Great to the December Revolt. Emphasis is given to "westernization"—modernization in economic, political, and social organization—and to competing ideologies, conservative as well as radical. Foreign affairs are given less attention than domestic, especially institutional and intellectual, affairs.

Three credit hours.

(Not offered 1971-72)

HISTORY 154.

Imperial Russia 1825-1917.

This course examines the experience of tsarist Russia, from Nicholas I to the collapse of the autocracy in 1917. Emphasis is given to "westernization"—modernization in economic, political, and social organization—and to competing ideologies, conservative as well as radical. Foreign affairs are given less attention than domestic, especially institutional and intellectual, affairs.

Three credit hours.

HISTORY 156.

Soviet Foreign Policy: 1917 to the present.

A study of the decisive elements in the formulation and implementation of Soviet foreign policy; special attention to the impact of external circumstances and domestic policies, alliances and international organization, propaganda and economic aid.

Three credit hours.

HISTORY 164.

Central and Eastern Europe in the Nineteenth Century.

This course examines the experience of the absolutist-bureaucratic empires of Europe, Imperial Germany, Imperial Russia, and the Hapsburg Empire, from the mid-nineteenth century to their collapse in World War I. Attention is given also to the organization by 1920 of the states which emerged from the collapse of the imperial structures.

Three credit hours.

(Not offered 1971-72)

HISTORY 165.

History of Tropical Africa.

This course offers a multi-disciplinary treatment of Africa south of the Sahara desert, with emphasis upon the distinctive characteristics of tropical history. Geographic and demographic factors are stressed. Historical emphasis is given to medieval African empires, the slave trade, commercial exchange with Europe and Asia, and the imposition of European rule in the 19th century. The nationalist movement and current problems of economic under-development and social change will be examined.

Three credit hours.

(Not offered 1971-72)

HISTORY 166.

History of Southern Africa.

The history of Southern Africa is given thematic treatment from 1652 to the establishment of the Union of South Africa. The expansion of European power into Rhodesia and the consolidation of a Portuguese empire in Mozambique and Angola will be treated. Principal emphasis will be given to the social, economic, and political complexities of South Africa after 1910. The course will examine the international ramifications of South African apartheid and Rhodesian independence.

Three credit hours.

(Not offered 1971-72)

HISTORY 167.

Racial Crisis in Southern Africa.

A study of the origins and development of the racial crisis in the southern part of the African continent. Individual reports are emphasized.

Three credit hours.

HISTORY 183, 184.

Modern European Imperialism.

This course examines the impact of modern European imperial expansion upon distant continents and alien societies. The systems of empire employed by the European powers and the nature of their commercial and political competition will be stressed. Principal emphasis will be given to the empire of Great Britain in the period after 1750. The slave system of the Atlantic basin, the abolition of the slave trade and slavery, the decline of the West India plantation colonies,

the impact of free trade upon the colonial empire, and the establishment of settlement colonies in Australasia, South Africa, and Canada will receive treatment. The second semester will focus upon the new imperialism of the late 19th century, the transition from Empire to Commonwealth, and the process of decolonization in the wake of World War II. *Six credit hours.*

HISTORY 191, 192.

The Papacy in the Modern and Contemporary World.

This course assesses the interrelationship of the papacy on the one hand and religious and secular movements on the other from the Renaissance through Vatican II. The first semester ends with Napoleon. *Six credit hours.*

HISTORY 201.

Seminar in American History.

This course may be taken either semester, but *not* both, in any academic year. Seminar for 1971-72: American Historiography. *Three credit hours.*

HISTORY 202.

Seminar in Latin American History.

This course may be taken either semester, but *not* both, in any academic year. Seminar for 1971-72: The Influence of the Armed Forces in Latin America. *Three credit hours.*

HISTORY 203.

Seminar in Pre-Modern History.

This course may be taken either semester, but *not* both, in any academic year. *Three credit hours.*
(Not offered 1971-72)

HISTORY 205.

Seminar in Modern History.

This course may be taken either semester, but *not* both, in any academic year. *Three credit hours.*
(Not offered 1971-72)

HISTORY 207.

Reading Course in History.

Reading of a selected list of documentary and authoritative works under direction with individual reports and discussion. Students enrolled in this course must receive approval of the Department. *Three credit hours.*

HISTORY 208.

Reading Course in History.

Reading of a selected list of documentary and authoritative works under direction with individual reports and discussion. Students enrolled in this course must receive approval of the Department. (This is not a continuation of 207.) *Three credit hours.*

DEPARTMENT OF

Mathematics

Professors: McBrien, Shanahan

Associate Professors: Perkins, J. MacDonnell, Sulski (*Chairman*), Tews

Assistant Professors: Dewey, Field, J. R. McCarthy, Noonan, Paciorek

Visiting Lecturers: Pomeroy, Sistare

The program in mathematics is based upon the awareness of the increasing contribution of mathematics to contemporary culture as well as its key role in scientific and humanistic education. Because mathematics has undergone basic changes in content as well as in point of view, there is strong emphasis in all courses on a synthesis of old and new concepts.

Seminars, individual discussion and research projects are an integral part of the department program. Mathematics majors have the use of a Common Room for informal discussion with staff members and fellow students. The O'Callahan Science Library has a fine selection of classical and contemporary mathematics books, monographs and journals available to all students in the College. The College has an I.B.M. system/360, Model 32K, computer with time available for instruction and research in computer science.

A mathematics major is required to complete ten semester courses in mathematics.

MATHEMATICS 21, 22.

Introductory Calculus and Probability I, II.

Topics covered are the algebra of sets, operations with functions, coordinate geometry, limits and continuity of real functions, integration and differentiation of the algebraic, exponential, logarithmic and trigonometric functions. Then the concepts of probability measure, independent trials process, mean and variance of random variables, Chebyshev's inequality and the law of large numbers are considered. Topics are selected from Markov chains and continuous probability.

Six credit hours.

MATHEMATICS 31, 32.

Principles of Analysis I, II.

This course in the calculus of real functions is intended for students who are planning to take further work in mathematics. It begins with a brief study of the algebra of sets, the algebra of functions, and the basic properties of the real number system. It goes on to consider the integral and differential calculus of the algebraic, logarithmic, exponential and trigonometric functions with applications to maxima and minima problems and some elementary differential equations. The second term includes topics from vector algebra, the calculus of curves and surfaces, the mean value theorem and Taylor's series with applications to scientific problems.

Six credit hours.

MATHEMATICS 33, 34.

Freshman Honors Section in Mathematics.

The mathematical material varies from year to year but usually the topics are selected from analysis and abstract algebra.

Topics studied in the 1969-70 course were from the general areas of calculus and algebra, correlating the two by examining the algebraic structure of function algebras which are defined by concepts from the calculus. Specific topics include the concept of area, integration and differentiation, infinite series and sequences, the real numbers as a complete ordered field, rings, groups, ideals and factorization.

Six credit hours.

MATHEMATICS 41, 42.

Principles of Analysis III, IV.

This course is a study of the calculus of several variables. The first term covers double and triple integrals with applications, transformation of integrals and the Jacobian, transformation of coordinates, the derivative and gradient of a scalar field, the chain rule for partial derivatives, and problems involving maxima and minima. Topics covered in the second term include an introduction to line integrals, Green's theorem, curl and divergence of vector fields, surface area, special first and second order differential equations, linear differential equations including power series solution, and topics in numerical analysis.

Six credit hours.

MATHEMATICS 43.

Linear Algebra.

This course provides an introduction to the study of vector spaces over the real and complex number fields. Topics covered include linear subspaces, quotient spaces, linear transformations, matrices and determinants. Equivalence of matrices is then considered, leading to the row echelon form and its various applications.

Three credit hours.

MATHEMATICS 51.

Introduction to Computers.

(This course may not be credited toward fulfilling graduation requirements.) Introduces the student to those concepts concerning computers that will enable him to understand their function in modern society. Primarily through the lecture, but with some practical use of the computer, the student will learn something of the basic structure of the modern digital computer, will attain an elementary understanding of the programming process, and will learn of the applications of the computer in various areas of society.

Two credit hours.

MATHEMATICS 52.

Intensive Computer Programming.

After an introduction to the basic structure of the computer and how it operates, the student will undertake an intensive and extensive study of the FORTRAN language, including the many extended features not treated in Mathematics 51, but present in the more sophisticated implementations of the language, such as SUBPROGRAMS, magnetic tape and disk input/output, the BLOCK DATA, COMPLEX, DATA, IMPLICIT and ASSIGN statements, as well as logical variables, functions used as arguments to subroutines, argument transfer by name as well as by value and variable dimensioning, etc. The student will design and implement programming projects of a significantly higher level of difficulty than

those of Mathematics 51. An introductory treatment of Basic Assembler Language for the IBM 360 computer will complete the course. *Three credit hours.*

MATHEMATICS 102.

Differential Geometry.

This is a first course in the differential geometry of curves and surfaces for students who have completed a year course in calculus and a semester course in linear algebra. Topics covered include the Frenet-Serret formulas, smooth surfaces in R^3 , fundamental forms, differentiable manifolds, vector fields, connections and a brief introduction to Riemannian geometry. *Three credit hours.*

MATHEMATICS 104.

Ordinary Differential Equations.

The first part of the course deals with linear differential equations; basic existence theorems are proved, equations with constant coefficients are treated in detail, and series methods are investigated in detail for the cases where the coefficients are either analytic or have Fuchsian singularities. Second-order boundary value problems are discussed with the self-adjoint cases treated in detail and the concept of operators acting on vector spaces is used. Differential equations with periodic coefficients are also treated. Non-linear systems will be discussed, the topics treated being existence and uniqueness theorems, series methods, stability theory, including a brief introduction to Lyapunov's direct method, and periodic systems. *Three credit hours.*

MATHEMATICS 106.

Theory of Probability.

This course in the algebra and calculus of probability includes the following topics: basic notions of probability defined on discrete sample spaces, combinatorial analysis, conditional probability, the binomial, Poisson and normal distributions and the DeMoivre-Laplace limit theorem; random variables and their numerical characteristics, generating functions, recurrent events, random walks and Markov chains, limit theorems and the laws of large numbers. *Three credit hours.*

(Not offered 1971-72)

MATHEMATICS 108.

Affine and Metric Geometry.

This course uses linear algebra to study affine and metric geometry. Topics considered include n -dimensional affine spaces over a vector space V , coordinate systems, parallelism, affine transformations, the theorems of Desargue and Pappas, metric vector spaces, orthogonality, quadratic forms, and a study of isometrics. *Three credit hours.*

MATHEMATICS 141, 142.

Calculus on Manifolds.

This course deals with calculus on manifolds and assumes that the student has a strong background in linear algebra. The following topics are taken up: the calculus of vector-valued functions, the Frenet equations, steady flows, real-valued functions of several variables, line integrals, the differential, the implicit function theorem, tensor products and exterior algebra, differential forms, integrals of forms over singular chains, the de Rham theorem. *Six credit hours.*

MATHEMATICS 143, 144.

Theory of Analytic Functions.

The ordinary topology of the complex numbers is first described. Compact and connected spaces, the effect of continuous mappings on such spaces, and the topological equivalence of the extended complex plane and its stereographic image, the complex sphere, are then considered. Analytic functions are defined and the Cauchy-Riemann equations introduced. Then the elementary functions are defined and examined for analyticity. Integral along a contour is next defined. This leads to the concept of winding number which is used as a basis for that part of homology theory which is needed in the study of analytic functions. During the second semester there is a thorough presentation of Cauchy's Integral Theorem and its implications, as well as Taylor and Laurent series, the calculus of residues, mapping properties of analytic functions, some examples of conformal maps, and some applications of analytic function theory to the theory of flows.

Six credit hours.

MATHEMATICS 151, 152.

Abstract Algebra.

The purpose of this course is to provide a systematic development of algebraic systems and to study those topics which are most useful in the application of algebra to other parts of mathematics and to other sciences. Topics covered include quotient groups, exact sequences, the isomorphism theorems, vector spaces and linear transformations, field extensions with some Galois theory, modules, tensor products, and topics in Noetherian rings.

Six credit hours.

(Not offered 1971-72)

MATHEMATICS 153.

Applied Algebra.

The purpose of this course is to give an introduction to certain topics in mathematics of an applied nature. There is no single unifying theme but much of the course will require a familiarity with linear algebra. Among the topics to be discussed are linear programming, game theory, integer and dynamic programming, coding theory, graph theory, flow networks. Prerequisite: Mathematics 43.

Three credit hours.

MATHEMATICS 161, 162.

Real and Abstract Analysis.

Topological ideas are introduced through a treatment of metric space topology. After the study of open, closed, compact and connected spaces with emphasis on their behavior under continuous mappings, selected topics from functional analysis are considered. These include \limsup and \liminf , relation of uniform convergence to differentiation and integration, and the Stone-Weierstrass approximation theorem. The second semester topics include an introduction to measure theory and Lebesgue-Stieltjes integration, Hilbert space and other material from linear space theory.

Six credit hours.

MATHEMATICS 163, 164.

Algebraic Topology.

The first semester is devoted to a study of the fundamental group, with emphasis on applications. Topics covered include Van Kampen's Theorem, computation of the fundamental group of a complex, classification of closed surfaces, three-

dimensional manifolds, and covering spaces. In the second semester, singular homology and cohomology are introduced, and the Mayer-Vietoris and Künneth Theorems are proved. Applications include fixed-point theorems, the Jordan-Brouwer Theorem and duality on manifolds. Homotopy groups and fiber bundles are considered briefly.

Six credit hours.

MATHEMATICS 171, 172.

Methods of Numerical Analysis.

The principal methods to be studied are: approximation of functions, methods of linear topological spaces and linear operators, iterative and topological methods, relaxation, interpolation and extrapolation, perturbation and graphical methods. Applications to computation of series, systems of linear equations, ordinary and partial differential equations, and eigenvalue problems will be included with practical experience in the computer laboratory.

Six credit hours.

MATHEMATICS 173, 174.

Principles and Techniques of Applied Mathematics.

The primary aim of this course is the understanding of a wide spectrum of scientific phenomena through the use of mathematical ideas, abstractions, methods and techniques. One of the principal aims will be to formulate idealized but relevant techniques. Topics included will be: ordinary differential equations: the heat equation, eigenvalue problems; partial differential equations: Poisson's theorem and examples; calculus of variations: Fourier analysis: the inversion problem of Fourier series.

Six credit hours.

MATHEMATICS 181.

Mathematical Logic.

Several systems of pure logic and applied logic will be discussed within a general framework which consists of three basic aspects of symbolic languages: grammatic construction, interpretations and deductive systems. The major results relative to completeness, incompleteness and decidability will be considered within this framework.

Three credit hours.

MATHEMATICS 201, 202.

Honors Seminar.

The chief aim of the mathematics seminar is to provide an opportunity for individual and group investigation of topics not covered in course work by the mathematics majors. The method employed is active participation on the part of the students. The subject matter varies to suit individual students and is often related to the research activity of the professor. In 1969-70 there were individuals and small groups carrying on such independent study in the areas of algebraic geometry, Lie groups, functional analysis, complex analysis, probability theory, commutative algebra, applied mathematics and the classical groups.

Six credit hours.

DEPARTMENT OF

Modern Languages and Literatures

Professors: Desautels, S. E. Flynn, Mc Nerney

Associate Professors: Baker, Fraser, McKenna

Assistant Professors: Bernstein, Bumgardner, Klein, Laires, Lamoureux (*Chairman*), Mattucci, Zwiebel

Instructors: J. D. Anderson, Baeppler, T. Kennedy, Severens, Soos

Visiting Lecturer: Kuziniec

The courses offered by the Department of Modern Languages and Literatures are intended to contribute to the student's intellectual and aesthetic development through the study of foreign languages, literatures and cultures.

Major programs, consisting of eight semester courses beyond the intermediate level, are offered in French, German, Italian, Russian and Spanish. The specific curriculum of each student will be arranged under the direction of the chairman. Students are urged to enrich their program by taking additional courses in their major language and in allied fields.

The Junior Year Abroad in Paris, Vienna, Freiburg, Madrid or Rome is open to qualified students.

The language laboratory offers to the student facilities for drills and exercises, as well as for listening to literary and cultural material, all appropriately coordinated with classroom work in the various courses.

Credit for the first semester in the following course ordinarily will not be given unless the second semester is also completed: Modern Languages

II

A Major in European Literature:

The Department of Modern Languages and Literatures offers a concentration in European Literature. Courses are conducted in English and employ translations. The program is designed to introduce students to the best and most representative works of the major cultures of the continent. Emphasis is also placed on developing a sufficient competence in at least one of the national languages to assure direct contact with the original texts.

Course Requirements:

Eight courses distributed as follows:

Four from: 101, 111, 121, 131, 141, and 143.

Four from: 145, 151, 153, Seminars devoted to special topics or major authors; courses in literature taught in the original language (a maximum of two).

Language Requirement:

A minimum of two semesters beyond the intermediate level in either French, German, Italian, Russian, or Spanish.

COMPARATIVE LITERATURE 327.

Major Movements of Western Literature.

A critical examination of the most characteristic Medieval, Renaissance and Neo-classical masterpieces in a continental European context. Special attention is given to the development, evolution and migration of genres, themes and techniques.

Three credit hours.

(Not offered 1971-72)

COMPARATIVE LITERATURE 328.

Major Movements of Western Literature.

Continental masterpieces from Rousseau to the modern period with a continued emphasis on the problems and methods of comparative literature.

Three credit hours.

(Not offered 1971-72)

FRENCH

FRENCH 11, 12.

Elementary French.

The aim of this course is the acquisition of a basic speaking, reading, and writing knowledge of idiomatic French. Three hours weekly; laboratory practice.

Six credit hours.

FRENCH 13, 14.

Review French.

A course designed to accommodate students who have already had French in high school, but who have placed below 450 in the CEEB French Achievement Test. In the first semester, a rapid review of elementary French, with the aim of a basic speaking, reading, and writing knowledge of idiomatic French. In the second semester, reading and discussion of cultural and literary texts. Three hours weekly. Laboratory practice.

Six credit hours.

FRENCH 21, 22.

Intermediate French.

A review of the fundamentals of the language supplemented by reading of literature and cultural material and by practice in oral expression. Three hours weekly; laboratory practice.

Six credit hours.

FRENCH 127, 128.

Aspects of French Culture.

A series of one-semester courses devoted to special literary, political, and cultural topics relating to France. Conducted in French with the pre-requisite of French 21, 22, or its equivalent. *Six credit hours.*

FRENCH 131, 132.

French Composition and Conversation.

The purpose of this course is to enable the student to achieve fluency in oral and written expression. *Six credit hours.*

FRENCH 141.

French Literature of the Middle Ages.

An introduction to epic and lyric poetry, as well as to significant prose works. *Three credit hours.*
(Conducted in French)

FRENCH 142.

The Sixteenth Century.

A study of major writers of this period: Rabelais, Montaigne, the Pleiade, etc. *Three credit hours.*
(Conducted in French)

FRENCH 151.

Seventeenth Century: Literature of the Pre-Classical Period (1600-1660).

Malherbe, Descartes, Corneille, Pascal, etc. *Three credit hours.*
(Conducted in French)
(Not offered 1971-72)

FRENCH 152.

Seventeenth Century: Literature of the Classical Period (1660-1700).

La Fontaine, Racine, Molière, Boileau, La Bruyère, etc. *Three credit hours.*
(Conducted in French)
(Not offered 1971-72)

FRENCH 163, 164.

The Age of Enlightenment.

A study of selected works of Montesquieu, Diderot, Voltaire, Rousseau, etc. *Six credit hours.*
(Conducted in French)

FRENCH 172.

The Nineteenth Century Novel.

A brief examination of the evolution of the French novel up to 1800, followed by the critical reading of works selected from the romantic and realistic novel: Constant, Chateaubriand, Stendhal, Balzac, and Flaubert; and the naturalist novel: Zola and Huysmans. *Three credit hours.*
(Conducted in French)

FRENCH 173.

Nineteenth Century Poetry.

The course studies the major poets of the nineteenth century grouped according to affinities: the Romantics, Vigny and Hugo; the Parnassian trend with Gautier, Leconte de Lisle, and Heredia; the Symbolist lineage of the "poètes damnés," Baudelaire, Verlaine, Rimbaud, Mallarmé; and the originals, Nerval and Lautréamont. Attention will be focused on these poets' conceptions concerning the relationship between Man and Cosmos, Logos and Nature, and on the poetic methods used to express them.

Three credit hours.

(Conducted in French)

FRENCH 181.

The Theater in the Twentieth Century.

A study of the many forms of the modern French theater which run the gamut from escapism to "engagement," from traditional psychology to absurd consciousness, and from almost formless spontaneity to the most minutely controlled rituals.

Three credit hours.

(Conducted in French)

(Not offered 1971-72)

FRENCH 182.

The Novel in the Twentieth Century.

The course studies the transformations in the form and conception of the novel from Proust and Gide, to the present, and its many expressions of the crises in the consciousness of modern man.

Three credit hours.

(Conducted in French)

(Not offered 1971-72)

FRENCH 183.

Twentieth Century Poetry.

The new sensibility revealed by French poets from Valéry and Apollinaire to Ponge and Bonnefoy is studied with special attention given to the many new forms and modes of expression developed in this genre.

Three credit hours.

(Conducted in French)

(Not offered 1971-72)

FRENCH 191.

Practical French Phonetics.

French pronunciation, diction and intonation in theory and practice. Corrective exercises, recordings for the analysis of individual pronunciation problems. Poetry and prose studied in phonetic transcription using the International Phonetic Alphabet, extemporaneous speaking and prepared readings.

Three credit hours.

FRENCH 193, 194.

Structure of the French Language.

A study of the sound and grammatical structure of Modern French with some consideration of its historical development. Stylistic analysis of literary works, *thèmes d'imitation* and *explications de texte*. Prerequisite: Fr. Comp. & Conv. or its equivalent.

Three credit hours.

(Conducted in French)

FRENCH 195.

Existentialism in the French Novel and Drama.

The course evaluates the rise and development of French existentialism in the theater and novel of the 1940's and 1950's. Among authors studied are: Malraux, Sartre, Camus, Simone de Beauvoir, etc.

Three credit hours.

(Conducted in English)

FRENCH 228.

Great French Novels of the 19th and 20th Centuries.

The course traces the evolution of the novel in the 19th and 20th centuries, from Chateaubriand, Balzac, and Stendhal, to Sartre and Camus.

Three credit hours.

(Conducted in English)

FRENCH 291, 292.

Junior Year Tutorial.

Eligible juniors concentrating in French may elect 291-92 for a full-year course. Those who wish to enroll must obtain permission from the Chairman of the Department of Modern Languages and Literatures.

Six credit hours.

FRENCH 293, 294.

Senior Year Tutorial.

Eligible seniors concentrating in French may elect French 293-94 for a full-year course. Those who wish to enroll must obtain permission from the Chairman of the Department of Modern Languages and Literatures.

Six credit hours.

FRENCH 301.

Man's Condition.

A study of French humanism through representative works of the major novelists of the first half of the 20th century. The legacy of Proust and Gide; Mauriac and Bernanos: the Catholic Novel; the "roman engagé": Malraux, Sartre, Saint-Exupéry, and Camus.

Three credit hours.

(Conducted in English)

(Not offered 1971-72)

FRENCH 376.

The Image of Man in Modern Literature.

This course focuses on the image of man as portrayed by modern novelists, representing seven different nationalities, with a gradual transition from mysticism to existentialism. Authors studied are: Melville, Dostoevsky, Kafka, Nietzsche, Gide, Bernanos, Silone, Hesse, Kazantzakis, Sartre, Camus and Malraux.

Three credit hours.

(Conducted in English)

FRENCH 396.

The French Novel Since 1945.

This study of modern French fiction and its principal critics attempts to discover which of the earlier literary trends are still represented, which have temporarily deceased and why, and what new forms have emerged. Readings will include works by Camus, Simone de Beauvoir, Genet, Robbe-Grillet, and Beckett, as well as lesser known writers.

Three credit hours.

GERMAN

GERMAN 11, 12.

Elementary German.

The aim of this course is the acquisition of a basic speaking, reading and writing knowledge of German. Three hours weekly, laboratory practice. *Six credit hours.*

GERMAN 21, 22.

Intermediate German.

A review of the fundamentals of the German language, supplemented by readings in literary and cultural texts as well as practice in oral expression. Prerequisite: German 11-12 or its equivalent. *Six credit hours.*

GERMAN 131, 132.

Masterworks of German Culture.

This course is designed to introduce the student to outstanding examples of German art and thought in all areas. The course is open to all levels and strongly recommended for prospective German majors and Freshmen seeking advanced placement. The course is given annually in German. *Six credit hours.*

GERMAN 133, 134.

German Composition and Conversation.

The aim of this course is the acquisition of a facility in both oral and written expression. Special emphasis is given to idioms and style. Weekly papers of some length are required. *Six credit hours.*

GERMAN 135.

Survey of German Literature from the Beginning to 1750.

This course is designed to familiarize the student with the development of German Literature from its earliest stages, through the Golden Age of the Medieval Period and beyond to the onset of the Age of Enlightenment. Lectures and illustrative readings in German. *Three credit hours.*

GERMAN 161, 162.

German Literature in the Age of Goethe (1749-1832).

A study of German Literature during its Golden Age, embracing the periods of Enlightenment, Storm and Stress, Classicism and Romanticism. Selected readings and lectures in German. *Six credit hours.*

GERMAN 171, 172.

Idealism and Realism. German Literature from Goethe's Death to 1880.

This course is devoted to the study of German Literature in the 19th Century, from the late Romantic Period through the Age of Realism. Lectures and selected readings in German. *Six credit hours.*

GERMAN 181, 182.

From Complacency to Chaos: German Literature in the 20th Century.

This course is devoted to a study of the evolution of German Literature from the Wilhelminian Period before the First World War through the chaotic years between 1914 and 1945 and the development of new trends in contemporary German Literature. Readings and lectures in German. *Six credit hours.*

(Not offered 1971-72)

GERMAN 184.

Seminar-Herman Hesse.

Discussions and interpretation of selected novels, essays, and poetry with an emphasis on the author's work after 1918; the works discussed will include *Demian*, *Steppenwolf*, *Siddhartha*, *Journey to the East*, and *The Glass Bead Game*.

Three credit hours.

GERMAN 191, 192.

The World Mirror. The German Novel in English Translation.

A course devoted to the evolution of the German novel and its depiction of reality. Readings from representative German novelists and lectures in English.

Six credit hours.

(Not offered 1971-72)

GERMAN 200.

Proseminar in German Literature.

Intense study of a specific problem, theme or author of German Literature with lectures, readings and papers in German.

Three credit hours.

(Not offered 1971-72)

GERMAN 291-292.

Junior Year Tutorial.

Eligible Juniors concentrating in German may elect German 291-292 for a full year course. Those wishing to enroll must obtain the permission of the Chairman of the Department of Modern Languages and Literatures.

Six credit hours.

GERMAN 293-294.

Senior Year Tutorial.

Eligible seniors concentrating in German may elect German 293-294 for a full year course. Those wishing to enroll must obtain the permission from the Chairman of the Department of Modern Languages and Literatures.

Six credit hours.

ITALIAN

ITALIAN 11, 12.

Elementary Italian.

An intensive introduction to the elements of the Italian language, with the emphasis on oral and aural proficiency.

Six credit hours.

ITALIAN 21, 22.

Intermediate Italian.

This course is for students who have successfully completed a basic course in the language. Literary emphasis is on the shorter works of Twentieth Century prose writers.

Six credit hours.

ITALIAN 131, 132.

Italian Composition and Expression.

This course is intended to perfect the speaking ability of the Italian student. There is emphasis, too, on the quality of the fine Italian sentence.

Six credit hours.

ITALIAN 133, 134.

Survey of Italian Literature.

The history of the literature of Italy, with selected readings. *Six credit hours.*
(Not offered 1971-72)

ITALIAN 291, 292.

Junior Year Tutorial.

Eligible juniors concentrating in Italian may elect Italian 291, 292 for a full year course. Those who wish to enroll must obtain permission from the Chairman of the Department of Modern Languages and Literatures. *Six credit hours.*

ITALIAN 293, 294.

Senior Year Tutorial.

Eligible seniors concentrating in Italian may elect Italian 293, 294 for a full year course. Those who wish to enroll must obtain permission from the Chairman of the Department of Modern Languages and Literatures. *Six credit hours.*

LINGUISTICS

LINGUISTICS 119, 120.

Seminar in Language.

An introductory survey course dealing with the definition, history and scientific description of human language, the development of linguistics research, and recent linguistic trends and theories. *Six credit hours.*

(Not offered 1971-72)

RUSSIAN

RUSSIAN 11, 12.

Elementary Russian.

The aim of this course is the acquisition of a basic speaking, reading, and writing knowledge of idiomatic Russian. Three hours weekly, laboratory practice. *Six credit hours.*

RUSSIAN 21, 22.

Intermediate Russian.

A continuation of Russian 11, 12 with added emphasis on acquiring oral fluency in contemporary Russian. Three hours weekly, laboratory practice. *Six credit hours.*

RUSSIAN 127, 128.

Masterpieces of Russian Literature.

Readings and translation of the outstanding nineteenth century. Brief lectures, discussions and exams in Russian. Materials include the bylina, Nestor's Chronicle, The Igor Tale, Derzhavin, Zhukovsky, Krylov, Karamzin, Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, Tolstoy, and Chekhov. *Three credit hours.*

RUSSIAN 131, 132.

Russian Composition and Conversation.

A course devoted to achieving the dual skills of conversational and compositional

fluency in contemporary Russian. Texts include Russian fiction, technical texts and newspapers. The course is conducted entirely in Russian. *Six credit hours.*

RUSSIAN 141, 142.

Stylistics.

A discussion of grammatical and syntactic anomalies. Special attention devoted to the verb and to problems involving lexical differentiation within semantically related word groups. *Six credit hours.*

RUSSIAN 171, 172.

Golden Age of Russian Literature.

Study of the prose of Russian 19th Century literature. Representative readings from the works of Pushkin, Gogol, Turgenev, Dostoevsky, Tolstoy, Chekhov and others. Special emphasis is on the transitions between succeeding esthetic literary movements: neo-classicism, romanticism, and realism. Readings, lectures and papers are in English with special discussion sections for those proficient in Russian. *Six credit hours.*

RUSSIAN 181, 182.

Soviet Literature.

The evolution of Russian Literature in the Soviet period. Representative authors include Gorki, Babel, Mayakovsky, Sholokhov, Olesha, Pasternak, and others. The course also includes conflicts in critical interpretations of literature, e.g., Marxism and Formalism. Readings, lectures and papers are in English. *Six credit hours.*
(Not offered 1971-72)

RUSSIAN 291, 292.

Junior Year Tutorial

Eligible juniors concentrating in Russian may elect Russian 291, 292 for a full year course. Those who wish to enroll must obtain permission from the Chairman of the Department of Modern Languages and Literatures. *Six credit hours.*

RUSSIAN 293, 294.

Senior Year Tutorial

Eligible seniors concentrating in Russian may elect Russian 293, 294 for a full year course. Those who wish to enroll must obtain permission from the Chairman of the Department of Modern Languages and Literatures. *Six credit hours.*

SPANISH

SPANISH 11, 12.

Elementary Spanish.

An introduction to the language and culture of the Hispanic World. *Six credit hours.*

SPANISH 21, 22.

Intermediate Spanish.

Hispanic language, literature and culture for students who have had a basic course (or courses) in the language. *Six credit hours.*

SPANISH 131, 132.

Spanish Composition and Expression.

Situation experience in the oral and written aspects of the language.

Six credit hours.

SPANISH 133, 134.

Survey of Spanish Literature.

The literature of the Iberian Peninsula across the centuries.

Six credit hours.

SPANISH 135, 136.

Survey of Spanish American Literature.

Panoramic view of the literature of the Spanish-speaking people of the New World.

Six credit hours.

(Not offered 1971-72)

SPANISH 141, 142.

A Golden Treasury of Spanish Literature (1500-1700).

This course is devoted to a study of the prose and poetry of some of the outstanding writers of this most exciting period in Spanish literature.

Six credit hours.

(Not offered 1971-72)

SPANISH 153, 154.

Cervantes and the Theater of the Golden Age.

Intensive study of the novels of Cervantes and some works of the outstanding dramatists of this period.

Six credit hours.

SPANISH 171, 172.

Nineteenth-Century Spanish Literature.

A comprehensive view of all genres found in Spanish literature in the nineteenth century. Major focus is centered on the romantic drama, the development of realism in the novel and the drama, the novels of Galdos and Valera, and the major poets throughout the century.

Three credit hours.

SPANISH 181, 182.

Twentieth-Century Spanish Literature.

A comprehensive view of all genres found in Spanish literature in the twentieth century, beginning with the Generation of 1898. Initial attention is given to the philosophy of the members of the Generation of 1898 followed by consideration of the development of modern drama in Benavente, Lorca, and Buero, the novel in Baroja and Cela, the essay, and modern and contemporary poetry.

Six credit hours.

(Not offered 1971-72)

SPANISH 183.

The Modern Novel.

A study of the important novelists of Spain in the twentieth century and their contribution to the artistic, philosophical, and social interpretation of the period. Readings by Cela, Laforet, Sanchez, Ferlosio, Matute, Delibes, Goytisolo, etc. Conducted in Spanish.

Three credit hours.

SPANISH 231, 232.

Seminar in Hispanic Literature.

A one-semester course offered both semesters dealing with some specialized area, movement, or writer in Hispanic literature which is changed each semester according to the needs and wishes of the Spanish faculty and students.

Six credit hours.

(Not offered 1971-72)

SPANISH 291, 292.

Junior Year Tutorial.

Eligible juniors concentrating in Spanish may elect 291, 292 for a full year course. Those who wish to enroll must obtain permission from the Chairman of the Department of Modern Languages and Literatures.

Six credit hours.

SPANISH 293, 294.

Senior Year Tutorial.

Eligible seniors concentrating in Spanish may elect Spanish 293, 294 for a full year course. Those who wish to enroll must obtain permission from the Chairman of the Department of Modern Languages and Literatures.

Six credit hours.

STUDIES IN EUROPEAN LITERATURE

S. E. L. 101.

The Medieval Epic and Courtly Literature.

An introduction to medieval vernacular literature. Epic, lyric, allegorical, and dramatic literature will be examined in representative works from several European countries. The major emphasis of the course is on the difference in perspective between the medieval world-view and the modern.

Three credit hours.

S. E. L. 111.

The Renaissance.

Literary manifestations of the period in Italy and Northern Europe. Readings from the representative works of Petrarch, Boccaccio, Machiavelli, Ariosto, Castiglione, Erasmus, Rabelais and Montaigne.

Three credit hours.

S. E. L. 121.

Baroque and Classic Literature.

An interdisciplinary approach to continental literature between 1580 and 1680. Among authors read are: Cervantes, Calderon, Lope de Vega, Corneille, Molière, Racine, Pascal and Grimmelshausen.

Three credit hours.

S. E. L. 131.

The Age of Enlightenment.

A study of the literature of eighteenth century Europe as it reflects the philosophical, cultural, and political aims of the Enlightenment. Among authors read are: Shaftesbury, Pope, Montesquieu, Voltaire, Diderot, Rousseau and Lessing.

Three credit hours.

S. E. L. 141.

European Romanticism.

A study of the different forms and expressions of continental Romanticism. Read-

ings of representative works by: E.T.A. Hoffmann, Kleist, Novalis, Schlegel, Tieck, Heine, Rousseau, Chateaubriand, Hugo, Nerval, Madame de Staël, Leopardi, and Manzoni. Special consideration is given to the relations between the Romantic Movements of the individual countries. *Three credit hours.*

S. E. L. 143.

The Rise of Realism in the Nineteenth-Century European Novel.

The emergence and development of the realist novel as an art form reflecting the literary, cultural, and social attitudes of Continental Europe of the nineteenth century. Among authors read are: Balzac, Stendhal, Gogol, Turgenev, Flaubert, Dostoevsky, Zola, Galdós, and Tolstoy. *Three credit hours.*

S. E. L. 145.

Seminar. Naturalism to Proust.

The naturalist novel of Zola and the Médan Group and its influence on several American authors; the dislocation of the movement and the transition to the introspective novels of Gide and Proust. Among authors read are: Zola, Maupassant, the Goncourt Brothers, Huysmans, Crane, Norris, Dreiser, Gide and Proust. *Three credit hours.*

S. E. L. 151.

The Modern European Novel.

A study of the modern novel with an emphasis on the most significant approaches to form and technique. Among authors read are: Gide, Mann, Musil, Kafka, Hesse, Malraux, Silone, Sartre, Camus, Grass, and Robbe-Grillet.

S. E. L. 153.

The European Theater: 1850 to World War I.

An intensive study of the continental theater. Representative plays of Büchner, Ibsen, Strindberg, Chekhov, Turgenev, Maeterlinck, Musset, Hauptmann, Wedekind.

DEPARTMENT OF

Naval Science

Professor: Moore (Chairman)

Staff: Costello (Executive Officer)

Staff: Delehaunty, Kay, Sage

The Department of Naval Science, a recognized department of instruction within the College, has as its purpose the providing of instruction in professional subjects dealing with the Navy and Marine Corps which, when added to the other academic instruction provided by the College, will meet the purpose for which the Naval Reserve Officers Training Corps was established.

The Naval Reserve Officers Training Corps consists of the NROTC Units at fifty-four colleges and universities throughout the United States. Its purpose is to provide a steady supply of well educated junior officers for the Navy and Marine Corps, and to build up a reserve of trained officers who will be ready to serve the country at a moment's notice in a national emergency. Students enrolled in the NROTC are of two categories, Regular and Contract. All procedures, benefits and requirements described hereinafter apply to both categories of NROTC students unless specifically indicated as pertaining to only one.

MILITARY STATUS

NROTC students wear the uniform only on such occasions as prescribed by the Professor of Naval Science. Normally, this will be at drills, ceremonies, and on cruises. In addition to observing the ordinary requirements of gentlemanly conduct, the NROTC students are subject to naval discipline and must conduct themselves at all times in a military manner when under naval jurisdiction, that is, when attending naval science classes, drills and exercises, and during training periods.

With the exception of the above described instances, NROTC students are in the same category as other students of the College.

STATUS ON GRADUATION

Contract students: After completion of their academic requirements for a baccalaureate degree and the four years of Naval requirements, which include the summer training, contract students are commissioned as ensigns in the United States Naval Reserve or second lieutenants in the United States Marine Corps Reserve, and are required to serve three years active duty unless deferred by the Navy Department for graduate study.

Regular students: Upon graduation, regular students are commissioned as ensigns in the United States Navy or second lieutenants in the United States Marine Corps. They are normally required to serve on active duty for a period of four years. Their seniority as Regular Navy ensigns or Regular Marine Corps second lieutenants is integrated with the Naval Academy Class of their graduating year. As Regulars, they do not need to request to remain on active duty.

SUMMER TRAINING

Regular students: All regular students are required to take two summer cruises and one summer period of aviation-amphibious indoctrination, usually of eight weeks' duration each. The cruises are made on board modern warships. The aviation indoctrination is usually conducted at Corpus Christi, Texas, and the amphibious indoctrination is usually conducted at Little Creek, Virginia.

Contract Students: Contract students are required to take one summer shipboard cruise between their junior and senior years. This summer training period is usually of six weeks duration.

For both regular and contract students, travel expenses from the College to the summer training site and back are furnished by the government. In addition, all students receive active duty pay during summer training.

EMOLUMENTS

Regular students: For regular students the cost of tuition, fees, and textbooks is paid by the government. Necessary uniforms are provided and students receive retainer pay at the rate of \$600 per year.

Contract students: Contract students receive no emoluments during the first two years in the program. During the last two years they receive a subsistence allowance of \$50.00 a month. They are issued the necessary uniforms and Naval Science textbooks at no expense.

ELIGIBILITY REQUIREMENTS

A candidate for the NROTC must:

1. Be a male citizen of the United States.
2. At the time of his enrollment, if a minor, have the consent of his parent or guardian.
3. Be not less than seventeen nor more than twenty-one years of age on July 1 of the year in which he enters the program. (Contract students may be enrolled if sixteen years of age on July 1 of the year in which they enter the program.)

4. Gain his own admittance to the College.
5. Agree, if he is a regular student, to remain unmarried until commissioned.
6. Be physically qualified, in accordance with the requirements for the U.S. Naval Academy, except that the vision requirements for contract students are 20/100 each eye, corrected by lenses to 20/20 (one eye can be 20/400 if the other is not lower than 20/70); and for regular students 20/40 each eye, correctible to 20/20, is permissible, if the student scores in the highest 10% in the national competition. The visual acuity requirement, in the absence of placing in the top 10 percentile for regular program candidates, is 20/20 vision.
7. Sign an agreement, if he is a contract student, to accept a commission, if tendered, as an ensign, U.S. Naval Reserve, or second lieutenant, U.S. Marine Corps Reserve, and serve three years on active duty upon completion of college training, if called by the Secretary of the Navy.
8. Sign an agreement, if he is a regular student, to accept a commission, if tendered, to retain this commission for a period of six years, and to serve not less than four years on active duty as an officer, if called by the Secretary of the Navy.

SPECIAL PROCEDURES

Contract students are enrolled by the Professor of Naval Science upon their own application and are subject to selection and physical examination at the College within a limited quota as assigned by the Navy Department. These students are taken primarily from the entering freshman class at the beginning of the fall semester.

Inasmuch as the selection of contract students is completed during the first week of the fall semester and in view of the fact that the contract quota is limited, all eligible students who desire to be considered for the NROTC program should apply prior to the first day of classes in the fall. An application is not binding, and, even after enrollment in the program, a contract student may withdraw from the program, without prejudice, upon his own request at any time within the first two years.

At the beginning of the junior year the contract student must execute an enlistment contract as a seaman in the Naval Reserve for a period of six years. This contract is automatically terminated upon his appointment to commissioned rank at graduation.

Regular students enter the NROTC through a nation-wide competition and selection system. The competition begins in the late fall of the year, approximately nine months before enrollment of the applicant.

Contract NROTC students may transfer from contract to regular status by competing for regular status. If selected they will be enrolled as regular students without loss of standing and receive the scholarship benefits accorded the NROTC regular students. Every year several contract students obtain scholarships in this manner.

THE NAVAL SCIENCE STUDENT

Disqualified NROTC applicants may take the Naval Science course for the purpose of acquiring advanced standing to be used when applying for NROTC enrollment at a later date in the event of removal of the disqualification. Also, the Naval Science course may be taken by those students who have no interest in NROTC enrollment, but who wish the instruction. Students in either of the above categories are known as Naval Science Students.

Naval Science students receive credit for satisfactory completion of the Naval Science course, but have no official status in the NROTC Program, and receive none of the advantages of the regular and contract NROTC students other than the training and background gained. This training would prove to be beneficial should the graduated Naval Science student apply for a commission through sources normally available to college graduates other than the NROTC Program.

DRAFT DEFERMENT

A student enrolled in the Naval ROTC will be deferred from the draft (Selective Service of 1948 and Universal Military Training Act of 1951) if he satisfactorily pursues the Naval ROTC course for four full years, including the summer training period applicable to his status as contract or regular student.

A contract student who is disenrolled prior to the start of his junior year in the NROTC will revert to the draft status of other college students not members of an ROTC Unit. After the start of his junior NROTC year and the receipt of the subsistence allowance, a disenrolled contract student may, at the discretion of the Chief of Naval Personnel, be ordered to two years of active duty in an enlisted status.

A regular student who is disenrolled prior to the start of his junior NROTC year will revert to the draft status of other college students not members of an ROTC Unit. After commencement of his junior year, a disenrolled regular student may, at the discretion of the Chief of Naval Personnel, be ordered to active duty in an enlisted status.

CURRICULA

General: In order to obtain a commission either in the U.S. Navy, U.S. Naval Reserve, U.S. Marine Corps, or U.S. Marine Corps Reserve, students are required to obtain a baccalaureate degree and complete eighteen semester hours in the Department of Naval Science. During each semester every NROTC student is required to attend one two-hour laboratory period each week.

Two separate curricula in naval science subjects are offered in the junior and senior years. One provides for the continued education of prospective Naval Officers, while the other prepares those who elect to be Marine Officers in Marine oriented subjects.

The following courses may not be taken by a regular student: pre-medical, pre-dental, and pre-theological. A contract student may take such courses but it is to be remembered that all NROTC graduates usually go on immediate active duty upon graduation, and so additional training for one of those professions will be delayed until completion of the period of obligated naval service.

REQUIREMENTS OTHER THAN NAVAL SCIENCE COURSES

All NROTC students are required to complete one year of mathematics and one semester of computer science prior to the end of their junior year.

All NROTC students are required to complete one year of physics or chemistry prior to the end of their junior year. Biological or earth sciences may be substituted only with prior approval of the professor of Naval Science.

NAVAL SCIENCE 11.

Naval Orientation.

An introductory course, which meets one hour per week, designed to acquaint first year midshipmen with the Department of Defense and the United States Navy, including the various mission areas and components of the Navy and the Marine Corps. Attention is also directed to nautical terminology, custom and tradition.

No degree credit.

NAVAL SCIENCE 12.

Introduction to Naval Ships Systems.

A course designed to familiarize midshipmen with the types, structure and purpose of naval ships. Ship compartmentation, propulsion systems, auxiliary power systems, interior communications, and ship control are included. Elements of ship design to achieve safe operations, and ship stability characteristics are examined.

No degree credit.

NAVAL SCIENCE 41.

Navigation.

The derivation and utility of celestial navigation and the application of spherical trigonometry to the astronomical triangle. Additional topics covered include piloting, electronic navigation and various navigational aids. Wave propagation theory is briefly covered. *Three credit hours.*

NAVAL SCIENCE 42.

Operations Analysis.

An introduction to operations analysis methods. The course features a brief review of basic probability theory, i.e., discrete probability theory, gaming matrices, and distribution curves. Additional topics include the application of quantitative inputs to decision-making, past usage of the OA method in the resolution of military and non-military problems, and admiralty law in its role as a constraint on naval operations. Substantial outside reading and an original project utilizing the OA method are required. *Three credit hours.*

NAVAL SCIENCE 51.

Naval Organization and Management.

This course has the objective of developing the student's understanding of the fundamental concepts and principles of management including the essential elements of leadership. Basic concepts and principles of organization management, and leadership are examined within a broad framework of social and industrial organization and are further developed through a detailed examination of local companies and of the complexity and sophistication of the Naval Establishment including the unique characteristics generated by its objectives, technological complexity, operating environment, and function in society. *Three credit hours.*

NAVAL SCIENCE 101.

American Military Affairs.

This course is a survey of military affairs in the United States from the American Revolution to the present. Using as a framework the American military experience, chronologically arranged, it describes the transformation from the limited wars of the Eighteenth Century to the total wars of this century, and the brush-fire wars of the last two decades. *Three credit hours.*

(Not offered 1971-72)

NAVAL SCIENCE 102.

National Security Policy.

This course deals with the formulation and implementation of American security policy. American military history is analyzed briefly to determine the factors bearing on the development of the defense structure of the United States. The methods of formulation of national security policy are studied, as is the role of each governmental component concerned with security affairs. The elements of national power are reviewed. *Three credit hours.*

MARINE CORPS

Candidates for commission in the Marine Corps will be required to complete NS11 and 12; in place of NS41, 42, 51, and 52, they will take courses in Marine Corps subjects as follows:

NAVAL SCIENCE 45.

Evolution of Warfare.

A historical study of armed conflict in order to develop an appreciation of continuity and of change in the evolution of warfare during important periods of the past and continuing to the present. *Three credit hours.*

NAVAL SCIENCE 55.*

Amphibious Doctrine.

A study of the development of amphibious doctrine with emphasis placed on its employment. *Three credit hours.*

- * Marine Option students are required to complete an approved elective during the second semester of their Junior and Senior years. The selected course must be relevant and enhance the student's professional knowledge.

DEPARTMENT OF

Philosophy

Professors: Hampsch, Haran, Shea

Associate Professors: Dilanni, Harrington, Hein, Lynch, Pax (*Chairman*)

Assistant Professors: F. Callahan, Cloeren, Feehan, Herx, Onyewuenyi

The Department of Philosophy discharges a two-fold function, one to the entire College, the other to its majors. To both it offers the opportunity to achieve a fuller and more reflective understanding of human experience in its intellectual, socio-political, aesthetic, religious and moral dimensions. To its majors, through a broad series of electives and through a personal advisory program, it extends the opportunity to obtain a more comprehensive view of the historical development and contemporary movements in philosophy, as well as the opportunity to pursue the thought of an individual philosopher in depth.

In general, the courses offered are open to the student body at large. However, the 100 and 200 level courses are available to freshmen only with the approval of the department chairman.

The minimum requirement for the major is 10 semester courses in philosophy, at least eight of which must be chosen from the 100 or 200 sections. Upon deciding to become a philosophy major, a student must choose an advisor from the philosophy faculty in conjunction with whom he will set up a program of studies within the department. There are no extra-departmental requirements for philosophy majors.

Besides a wide-range of general and more specialized courses, the department offers a number of seminars, tutorials and opportunities for independent study. Student-faculty community is deepened through informal conversation in the relaxed and reflective atmosphere of a Common Room.

INTRODUCTORY COURSES

PHILOSOPHY 11.

The Nature of Philosophical Inquiry.

A study of selected historical works in philosophy which represent distinctive philosophical styles. We will investigate the nature of philosophical problems, how they originate, how they are articulated, and alternative methods of solving or dissolving them. Attention will be given to the historical and contemporary significance of philosophical problems, their living context and their integration with intellectual and active life.

Three credit hours.

PHILOSOPHY 21.

Introduction to Philosophy: Man the Goal of History.

A descriptive analysis of our original experience of reality in judgmental consciousness. It involves a critical study of the fundamental notions of the identity, intelligibility, existential and aesthetic value of reality culminating in an evolutionary view of man and his absolute dignity and value. *Three credit hours.*

PHILOSOPHY 31.

Philosophy of Man.

A studied examination of man's triune nature, vegetative, sentient and intellectual. It comprises an analytical evaluation of these dependent integrations, especially man's sentient and rational operations insofar as they involve mutually aggressive and antagonistic desires. Conscious and unconscious motivations are especially considered. The form of personality by which the individual is constituted a person. The method employed is synthesis and dialogue. *Three credit hours.*

PHILOSOPHY 41.

Man in Society: His Freedom and Responsibility.

An attempt to discover a way to think about human values, personal freedom and the quality of life in the face of advancing technology and socio-cultural change. The course will approach this problem through a discussion of concrete problems in contemporary society, move to a critical evaluation of the solutions posed by the contemporary schools of Utilitarianism, Existentialism, Situationism, Christian Evolutionism and Social Activism (Marcuse, etc.) and conclude with an attempt at constructing a theory of value valid for man in our times. *Three credit hours.*

PHILOSOPHY 51.

God in Human Experience.

In view of the wide variety of interpretations of THE MEANING OF GOD, in our pluralistic society, this course attempts critical examination of some of these views. This is followed by an analytical investigation of a rational basis for the affirmation of the existence of God. A study is then made of the nature of this existence; of God's wisdom and power; His relation to time and space and His dealings with universe, especially His relation to the free will actions of man. Finally, God's providence and human beatitude are considered. *Three credit hours.*

PHILOSOPHY 61.

Introduction to Philosophy: Its Methods and its Problems.

A study of selected philosophical texts, with the aim of introducing students to the nature of philosophical thinking, and the variety of philosophical issues and areas, methods and theories. *Three credit hours.*

PHILOSOPHY 71.

Introduction to Philosophy.

This course will present the basic ideas of Formal Aristotelean logic and introduce the student to some philosophical problems viz., concerning the relation of concepts to mind and action; the nature of the soul, the existence of God and the nature and basis of value judgments. *Three credit hours.*

PHILOSOPHY 91.

Structuralism (Freshman Seminar).

A discussion of man in his transition from nature to culture based upon the writings of the French anthropologist Claude Levi-Strauss. *Three credit hours.*

(Not offered 1971-72)

INTERMEDIATE COURSES

PHILOSOPHY 101.

Metaphysics.

This course is an experience-grounded analysis of the real in which its structure, first principles, and concrete realizations, with emphasis on the person and community, is discovered and studied. The investigation moves to a rational inquiry into the existence and character of the ultimate origin and purpose of real being.

Three credit hours.

PHILOSOPHY 102.

Metaphysics.

An attempt will be made to understand human experience as fundamentally a participation in reality. The aim will be to achieve a synthesis of classical and contemporary thought by emphasizing the bi-polarity of subject and object. This will include a critical analysis of the intelligibility and value of total experience. The question of the ground of being will be discussed.

Three credit hours.

PHILOSOPHY 103.

The Historical Development of Metaphysics.

This course traces the origin and growth of metaphysics in western philosophy from its Greek beginnings through contemporary attempts to eliminate metaphysical statements as nonsensical utterances. The reading will include selections from Plato, Aristotle, Thomas Aquinas, Descartes, Kant and Carnap.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 104.

Approaches to Ethics.

An examination of the attempts to arrive at the foundations of ethical values and the ultimate meaning of human experience. An emphasis is placed on the continuity in the development and refinement of these attempts historically, so that contemporary moral problems and their solution may be seen in proper perspective.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 105.

Foundations for a Contemporary Ethics.

An attempt, through the discussion of proposed themes, to arrive at some agreement concerning the foundations of moral evaluation and the basic principles and structure for an ethic viable for contemporary culture.

Three credit hours.

PHILOSOPHY 106.

Moral Philosophy.

An historical and critical survey of the great systems of moral philosophy.

Three credit hours.

PHILOSOPHY 107.

Foundational Questions in Ethics.

An explication of the distinctive character of moral experience, involving a phenomenological description of its various moments and dimensions and a study of typical interpretations of this experience.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 108.

Philosophy of Biology.

This course approaches the philosophy of science from the point of view of the life sciences. It will deal with such specifically biological concepts as mechanism and vitalism, spontaneous generation, biological death and evolutionary theory. Drawing upon these investigations, it will reconsider such traditional methodological issues in the philosophy of science as prediction and explanation, purposiveness, the role of theory in observation, and the limitations of science.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 109.

Theory of Knowledge.

A critical attempt to construct a sound theory of knowledge which avoids the extremes of Scepticism, Idealism and Relativism while accounting for the nature and foundation of knowledge and truth. There will be a wide variety of readings and discussions.

Three credit hours.

PHILOSOPHY 115.

Introductory Logic.

This is an attempt to introduce the beginning student to contemporary logic: its nature, value and limitations. Special emphasis will be given to propositional calculus and quantification theory and their relation to traditional Aristotelian logic as well as their philosophical implications. Its purpose will be to familiarize the student with symbolic notation and natural deduction as well as enable him to recognize and evaluate various kinds of argumentation and related fallacies.

Three credit hours.

PHILOSOPHY 116.

Mathematical Logic.

Sentential and first order predicate calculus. Formalized language. Natural systems and axiomatics. Tautology. Inference. Fundamental metatheorems, logic, mind and reality. Presuppositions, limitations and value in relation to philosophical understanding.

Three credit hours.

PHILOSOPHY 125.

Ancient Philosophy.

A careful study of the main contributions of the ancient Greek philosophers to the development of western thought. The student will be acquainted with the central problems raised by Pre-Socratic Greek Philosophy and will then examine the efforts of Socrates, Plato and Aristotle to meet these problems. The central focus of the course will be the reading of many of the works of Plato and Aristotle. The course will close with a consideration of important Post-Aristotelian contributions, Stoicism, Scepticism, etc.

Three credit hours.

PHILOSOPHY 130.

Medieval Philosophy.

A study of medieval thought from Augustine to Ockham with special emphasis on Augustine, Eriugena, St. Bonaventure, St. Thomas, Duns Scotus, and Ockham. Also, an analysis of the philosophical movement in the thirteenth century.

Three credit hours.

PHILOSOPHY 135.

Modern Philosophy I.

This course will study the origins of modern philosophy: Descartes' turning towards the subject, his attempt at a justified method guided by the ideal of mathematical certainty, its influence on the development of European rationalism, Spinoza, Leibniz, Wolff. Equal attention will be given to the competing empiricist philosophers and their attempts at providing a new approach to philosophy and science based on experience. The discussion will focus on Bacon, Hobbes, Locke, Berkeley, Hume.

Three credit hours.

PHILOSOPHY 141.

Modern Philosophy II.

In view of the clash between rationalism and empiricism Kant tried to overcome their positions in his critical philosophy. His transcendental investigations into the nature of metaphysics led him to develop a new theory of knowledge, a new interpretation of the nature of sciences and a new view of the nature of morality. Despite Kant's rejection of speculative philosophy speculation rose to unprecedented heights in Fichte, Schelling and Hegel. Particular attention will be given to the rise of this new speculative philosophy in the German idealists (from Kant to Fichte and Hegel). The course will close with outlining the growing opposition to Hegel's thought (Marx and Kierkegaard) which laid the foundations for 20th century Logical Positivism, Marxism and Existentialism.

Three credit hours.

PHILOSOPHY 145.

Phenomenology and Existentialism I.

An examination of the origin and intent of the contemporary existential movement as it developed from the phenomenology of Edmund Husserl. Detailed study of the work of Heidegger, and Sartre. Influence of Existentialism in the areas of psychology, sociology, art, political and religious thought.

Three credit hours.

PHILOSOPHY 147.

Analytic Philosophy.

A study of the origins and aims of this contemporary movement, through an examination of the principal works of its founders and contributors, with stress on a critical appraisal of its presuppositions, value and limitations.

Three credit hours.

PHILOSOPHY 152.

British Empiricism.

An historical and critical survey of the philosophies of Locke and Hume based principally on Locke's *Essay Concerning Human Understanding* and Hume's *A Treatise on Human Nature*. Attention will also be given to Berkeley and the place of British Empiricism in the history of modern thought.

Three credit hours.
(Not offered 1971-72)

PHILOSOPHY 153.

American Philosophy.

A survey of the beginnings and development of American philosophic thought. Detailed discussions of the work of several leading men. The contemporary scene.

Three credit hours.

PHILOSOPHY 156.

Utopian Models in Political Philosophy.

A study will be undertaken into classical designs of ideal societies (utopias) in order to critically discuss the present-day interest in Utopias and their different functions such as blueprints for a better future, forms of escapism, i.e. flight from present-day problems, serious warnings against the imminent dangers of a world in which the idea of technical progress is one of the decisive factors. Among the authors studied will be Plato, More, Bacon, Campanella, Zamiatin, Huxley, Orwell.

Three credit hours.

PHILOSOPHY 157.

Language, Myth and Thought.

A philosophical reflection upon the complex relationships which exist between experience, thought and language, and the implications of these relationships for a philosophy of culture. Reading will be selected from the works of Heidegger, Wittgenstein, Cassirer, Merleau-Ponty and Jaspers. Material will be introduced from the Contemporary Continental school of Hermeneutics led by Ricoeur, Gadamer, etc.

Three credit hours.

PHILOSOPHY 158.

Philosophy of Religion in the 20th Century.

This course will trace the history of religious philosophical thought from the sceptical attacks of David Hume, through Kant and Hegel down to modern existential and linguistic philosophers. It will evaluate these positions and their influence on modern theologians. It will end with a proposed realistic theism.

Three credit hours.

PHILOSOPHY 159.

Freedom and Conscience.

The nature, function, dignity and excellence of freedom and of conscience are discussed. The impact of Existentialism, Phenomenology and Personalism on modern man's psychological awareness of his uniqueness are explored. The relevant documents of Vatican II, with special emphasis on the parts in which the Fathers of the Council gave conclusions from natural reason, are studied. Finally freedom of conscience, in its true meaning, and as applied to specific moral problems of our day, is treated.

Three credit hours.

PHILOSOPHY 160.

Aesthetics I.

An examination of philosophical problems related to aesthetic experience especially, but not exclusively, as derived from the arts. We shall consider such topics as creativity, the definition of art, the apprehension and evaluation of aesthetic experience, its effects and its role in a broad human context. Study materials will be drawn from the arts, as well as from philosophical, psychological and historical sources and works of criticism.

Three credit hours.

PHILOSOPHY 162.

Existential Marxism.

A critical analysis of Marxism from the viewpoint of Existentialism. In particular the course will concentrate on the notions of individual freedom in Existentialism and social responsibility in Marxism.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 163.

The Meaning of Sexuality.

A philosophical inquiry and examination of the person in his sexual meaning and relating. The study is grounded in an explicit intersubjective analysis of man and moral action and analyzes various types of love-experience and fundamental orientations and attitudes. The moral perspective is brought to bear upon a variety of important and current questions and practices and this with regard to cultural influences and the growing awareness of the value and meaning of man. The course concludes with remarks on the conjugal experience, the celibate experience and the mystery aspect of love.

Three credit hours.

PHILOSOPHY 164.

Introduction to African Philosophy.

Thorough study of the major structures of African philosophical thought in their historical setting, aiming at understanding its characteristic vision. Examination of perspectives presented by Voodoo, Ntu, Nommo and Hantu. A study of selected works of authors such as Chinua, Achebe, Alan Paton, Cyprian Ekwenski, Leopold Senghor. This will enable the students, through class discussion, to create a shared experience of the works and proceed to a philosophical discussion of the issues suggested by the writer and the situation he creates.

Three credit hours.

PHILOSOPHY 165.

Eastern Thought.

A comparative study of the central ideas of Hinduism, Buddhism, Taoism, Confucianism and Zen. Relation to western philosophies and religions and to contemporary Asian thought.

Three credit hours.

PHILOSOPHY 166.

Deception and Lying.

A joint attempt of student and professor to make a descriptive analysis and moral evaluation of deception and its various kinds with special emphasis on verbal deception or lying in both personal and community communication. It will include a limited number of readings of both contemporary and ancient philosophers and a wide range of related discussion topics. (Open to All).

Three credit hours.

PHILOSOPHY 167.

Theory of Communism.

An in-depth analysis of Marxism-Leninism. A study of its basic tenets as applied practically in the socialist world to problems of economics, politics, jurisprudence, education, science, religion, morality and art. Source materials come principally from the classics of Marxism-Leninism and the writings of contemporary theoreticians of the world communist movement.

Three credit hours.

PHILOSOPHY 168.

Medical Ethics.

That good morals and good medicine are closely interrelated has become a truism in medicine. This course seeks to explore what is good and right or bad and wrong in many critical areas in medicine today, as well as in problems that are arising from the expertise to manipulate human intelligence psychochemically, possible planned manipulation of the genetic base of the human race and other areas newly opened by biochemical research. The course involves some lectures but principally dialogue with doctors who are experts in internal medicine, surgery in all its aspects, psychiatry, pediatrics, orthopedics, obstetrics and gynecology. Medico-moral problems in these and other areas are explored. *Three credit hours.*

PHILOSOPHY 169.

Mind Expansion and Self Knowledge.

Christian and Oriental Mysticism and chemically induced states will be descriptively analyzed, contrasted and evaluated in their foundations, comparative methods and effectiveness. Readings and discussion will cover a wide range of books and topics. (Open to All) *Three credit hours.*

PHILOSOPHY 170.

Philosophy of State and Law.

A study of such problems as the nature of the state, political power and authority, law, legal rights and obligations, etc., as seen from the perspective of several distinct traditions within Western philosophical thought. *Three credit hours.*

PHILOSOPHY 171.

Philosophy of Science.

Examination and discussion of such matters as empirical and logical foundations and completeness of physical science, quantum theory, relativistic field theory, cosmology. *Three credit hours.*

PHILOSOPHY 172.

Philosophical Investigation of Marriage.

An investigation into the structure of inter-personal relations as forming the framework of marriage, marriage as one form of co-presence, the social implications of marriage, possibilities of human development within marriage, parenthood and sonship. *Three credit hours.*

(Not offered 1971-72)

PHILOSOPHY 174.

Philosophy of Existential Love.

The course begins in a contemporary setting with a study of Fromm's popular work *The Art of Loving*. Then it returns to the famous dialogues of Plato on love, studying them for themselves and for the insights which they give us today. Aristotle's analytic essay on "Friendship" stands in contrast to his mentor's colorful exposition and is a good example of their different approaches to philosophy. Then contemporary existential views of love are explored as they appear in selected texts. *Three credit hours.*

PHILOSOPHY 175.

Concept of "Person" in Contemporary Philosophy.

A reflection upon the new influential notions of human personhood (and cor-

relatively of freedom, human action and authenticity) as they appear in contemporary schools of philosophy. Readings will be selected from structuralism and linguistic analysis.

Three credit hours.

PHILOSOPHY 176.

God in Modern Philosophy.

An investigation into the attitude of some outstanding modern thinkers with respect to the natural knowability of God. An effort will be made to evaluate their positions.

Three credit hours.

PHILOSOPHY 177.

Philosophy of Religious Experience.

An examination of religious experience as a specific type of experience: a description of religious experience in its various manifestations, primitive and contemporary, eastern and western; a philosophical investigation of the epistemological and ontological conditions under which this experience is meaningful.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 178.

Faith and Reason.

A critical examination of religious faith and natural reason as two distinctive ways of knowing, and a consideration of relationships which may exist between these kinds of knowledge, viewed in the light of traditional and contemporary positions.

Three credit hours.

PHILOSOPHY 179.

Contemporary Atheism.

A phenomenological and historical analysis of the nature and origins of the contemporary attitude toward God. Readings will be taken from Freud, Feuerbach, Marx, Nietzsche and the "Death of God" thinkers.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 183.

Hegel.

This course will be an effort toward understanding the Philosophy of Hegel as one of the high points in the development of modern philosophy. A study will be made of its place within the current of German idealism, especially with reference to Kant. Attention will center chiefly on Hegel's thought as presented in the *Phenomenology of the Spirit*. His vision of reality as the self-manifestation or coming to consciousness, of the Absolute Spirit as it unfolds in the realm of Logic, Nature, and the human mind. Stress will be put on Hegel's view of the philosophy of history, the history of philosophy, the state and religion. A special effort will be made to evaluate critically his analysis of experience. The influence of Hegel on subsequent philosophy and his relevance to the present.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 184.

Kierkegaard.

The rise of modern existentialism and the relevance of Kierkegaard. An attempt will be made to achieve a thorough understanding and a critical evaluation of

his thought. His views on the nature of philosophy and his criticism of contemporary Christianity. Also included will be a study of the philosophical scene in Europe during the second quarter of the nineteenth century; Kierkegaard as reacting against Hegel, Kierkegaard as contrasted with Nietzsche. Emphasis will be put on his more philosophical works, especially the *Concluding Unscientific Postscript*. Greatest attention will be given to the questions of the subjectivity of truth and personal transcendence. Throughout, an effort will be made to consider Kierkegaard in the light of present problems and in his influence on Sartre, Camus, and Marcel.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 185.

Nietzsche.

An attempt will be made to survey the entire range of Nietzsche's thought from the *Birth of Tragedy* to the final autobiographical *Ecce Homo*. Special attention will be paid to the philosophical poem *Thus Spoke Zarathustra*. Throughout the approach will be historical and critical. It will be historical in relating Nietzsche to previous philosophers within the modern tradition, especially to Schopenhauer, Kant and Hegel; it will be critical in that an attempt will be made to evaluate his positions as thoroughly as possible. In this connection special attention will be paid to the epistemological foundations of his thought. There will be a consideration of Nietzsche and his great near-contemporary, Kierkegaard. Finally there will be some study of his relationship to Heidegger and Sartre with a view to the applicability of his insights to the present day.

Three credit hours.

PHILOSOPHY 186.

Heidegger.

This course will focus primarily on the reading and discussion of Heidegger's *Being and Time*. Special attention will be paid to the criticism Heidegger has made of the history of Western philosophy from the time of the Greeks to the present day. There will be an examination and criticism of his theory of truth, along with a careful analysis of the various structures that are present within the human being. We will endeavor to follow out to their final implications the ideas of Heidegger on man as being-in-the-world, historically and culturally conditioned with a view to appropriating what is valid in the thought of this major figure in twentieth century existentialism.

Three credit hours.

PHILOSOPHY 189.

Locke and Hume.

This will be an attempt to understand the growth and development of Empirical thought by a critical reading of the works of two outstanding British Empiricists. Collateral reading on these authors will be read. The readings will be Locke's *Essay concerning Human Understanding* and his *Second Treatise of Government*; David Hume's *Enquiries concerning Human Understanding and concerning Morals*, *Dialogues concerning Natural Religion*. The place of George Berkeley in this tradition will be studied.

Three credit hours.

ADVANCED

PHILOSOPHY 204.

Seminar: Philosophical Method.

The central themes of this study are the interdependence of language and thought

and the critical function of linguistic analysis. These problems will be dealt with by discussing selected texts from the works of Bacon, Locke, Berkeley, Hamann, Lichtenberg, Reinhold, Humboldt, Gruppe, Cassirer, Langer, Whorf, and Austin.
Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 207.

Meta-Ethical Problems.

A critical study of ethical theory within the Analytic tradition. Special attention will be given to the problems of the origin, meaning and justification of ethical terms and judgments as presented by the Schools of Naturalism, Intuitionism and Emotivism. Post-Emotivist theories will be discussed in respect to their attempt to construct a logic of ethical discourse. .
Three credit hours.

PHILOSOPHY 211.

Seminar: Contemporary Ideologies in America.

A course dealing with the origins, development and current positions of the major ideologies underlying social and political activities in the U. S., viz., Conservatism, Radical Right, Liberalism, Leninism, Trotskyite Marxism, Neo-anarchism, Black Militancy, and Socialist Humanism.
Three credit hours.

PHILOSOPHY 212.

Seminar: Aesthetics II.

This course will be run as a seminar focusing in depth upon a specific issue in aesthetics. Topics of particular concern will be selected through consultation between students and professor, and will reflect their mutual interests. Problems examined might relate to the evaluation of art, the cognitive function of art, negative aesthetic dimensions, the relation of art to science, politics or education. Reading may be drawn from all areas pertinent to the issue. The completion of Aesthetics I is not a prerequisite for enrollment in Aesthetics II, but some acquaintance, either with philosophy or with a particular art form should be demonstrable.
Three credit hours.

PHILOSOPHY 213.

Death.

The philosophical consideration of the contemporary discussion of man and death.
Three credit hours.

PHILOSOPHY 214.

Philosophy of Mathematics.

Character and methodology. Elementary notions arising from set theory and topology. Abstract structures and reality. The infinite. Foundation—theories: logicalism, formalism, intuitionism. Mathematics as revealing of mind. Limitations and noetic value.
Three credit hours.

PHILOSOPHY 215.

Philosophy of Physics.

Character of physics. Early classical framework: space, time, mass, motion, action at a distance, general laws, Mach's viewpoint. Classical fields. Space-time structure: presuppositions and foundations of special relativity; generalizations. Issues arising from quantum theory. Remarks on the foundations of physics.
Three credit hours.

PHILOSOPHY 216.

Seminar: Philosophy of History.

A study of the various attempts to answer the question: What is the meaning of History? Representative theorists will be chosen from the periods of the Renaissance, 17-18th centuries, the 19th century, and the present. *Three credit hours.*

PHILOSOPHY 217.

Philosophy of History II.

An examination of the endeavour to formulate a speculative philosophy of history, dealing mainly with the major texts of those thinkers who have formulated the competing philosophies of history of today. *Three credit hours.*

(Not offered 1971-72)

PHILOSOPHY 218.

Seminar: Existentialism II.

Seminar examining the major works of several masters of existential philosophy. Choice of texts and authors will vary with semester. Prerequisite: Philosophy 145 or an introductory knowledge of the field. *Three credit hours.*

PHILOSOPHY 221.

Wittgenstein.

Wittgenstein is one of the most influential 20th century philosophers. Through his early work he deeply influenced the development of the Vienna Circle and of logical empiricism in general; the thought of his later period gave a new turn to philosophy in the English speaking world after World War II. The course will deal chiefly with Wittgenstein's *Tractatus Logico-philosophicus* and his posthumously published *Philosophical Investigations* but also consider different interpretations of Wittgenstein in contemporary philosophy. *Three credit hours.*

PHILOSOPHY 222.

Augustine and Evil.

The Neo-Platonic background of the notion of evil, Augustine's personal encounter and struggle with evil, and his solution to the problem of evil.

Three credit hours.

PHILOSOPHY 225.

Seminar: Pre-Socratic Philosophy.

The course will study the origin of western philosophy by evaluating the intellectual contribution of philosophers before Socrates to the subsequent development of both science and European philosophy. It will investigate the relationship between myth and philosophy and also the development of various schools of philosophy in Italy (Pythagoreans, Eleatics) and conclude with a discussion of the atomists. Emphasis will be placed upon the study of the texts of Pre-Socratic philosophers and the interpretations of modern scholars. *Three credit hours.*

(Not offered 1971-72)

PHILOSOPHY 235.

Plato.

An introduction to the philosophy of Plato; his dispute with the sophists of his day and his discovery of the theory of Ideas, the consequences of this discovery for his understanding of the life of the soul in terms of love and knowledge, and

his last critical reflections on his own theories, developed through a critical reflection on his major dialogues.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 238.

Aristotle.

A detailed examination of selected texts and themes in the works of Aristotle. Typical works to be studied are, the *Physics*, the *Metaphysics*, the *Treatise on the Soul*, and the *Nicomachean Ethics*.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 245.

Thomas Aquinas.

An introduction to the philosophical synthesis of Thomas Aquinas, his consideration of God, creation, nature, and man, as seen through a study of his principal writings.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 250.

Special Problems in Metaphysics.

A systematic reflection on the metaphysical problems of time, identity, and existence in both their classical and contemporary formulation.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 260.

Kant.

A reading course in the primary sources, concentrating on the first and second *Critiques*; the relationship between these two works and their setting in the whole Kantian effort. The meaning of reason and the primacy of the practical use of reason. The influence of Kant on later philosophical writers.

Three credit hours.

(Not offered 1971-72)

PHILOSOPHY 295.

Special Topics & Tutorials.

Independent study and tutorial work in various subjects suited to the needs and interests of the students.

Three or six credits.

DEPARTMENT OF

Physics

Professors: Gunter, Kennedy (Chairman), Sarup, T. Smith

Associate Professors: Kaseta, R. MacDonnell, Tangherlini

Assistant Professors: Beyea, Li

The Physics Department offers a flexible program of study in physics which may be designed to suit the individual needs of the student. The curriculum leading to the bachelor's degree in physics is designed to provide a thorough foundation in the principal branches of physics. With this background and appropriately selected advanced courses a student is well prepared for further study leading to advanced degrees in science, medicine, or engineering, or for many positions in research, business, teaching and other fields.

Freshmen planning to major in physics are ordinarily enrolled in Physics I and II, an intensive year course in mechanics, thermal physics, wave motion, and electricity and magnetism, and optics with liberal use of [the] calculus (taken concurrently in the Mathematics Department). Required courses for a major in physics are Physics I and II (Ph. 23, 24) or General Physics (Ph. 21, 22); and Physics III (Ph. 25). Beyond these courses the individual student will select with the guidance of his departmental adviser a minimum of seven courses at the one hundred or two hundred level, including at least two laboratory courses, which will best fit his goals.

A program of supervised research in theoretical or experimental physics is available to qualified physics majors. Research and student laboratory equipment include a 2 Mev positive ion Van de Graaff accelerator, a 512 channel pulse-height analyzer, satellite tracking equipment, ultraviolet monochrometers, a precision refractometer, a large aperture Twyman-Green interferometer, crystal growing equipment, a 7 inch variable gap precision electromagnet, a 1.5 meter optical spectrograph, an x-ray diffraction system, a 5.5 inch refracting telescope in the College observatory, and a H.P. 9100B calculator. The College also has an I.B.M. 360 computer with time available for student instruction and research.

PHYSICS 21.

General Physics.

An introduction to the basic concepts of physics using calculus. Three lectures and one (two-hour) laboratory period. *Four credit hours.*

PHYSICS 22.

General Physics.

Continuation of Physics 21. Three lectures and one (three-hour) laboratory period.
Four credit hours.

PHYSICS 23.

Physics I.

An intensive study of the basic principles of mechanics, wave motion, and thermal physics, with liberal use of the calculus. Primarily for physics majors. Four lectures.
Four credit hours.

PHYSICS 24.

Physics II.

Continuation of Physics 23. An intensive study of the basic principles of electricity and magnetism and optics. Three lectures and one (three-hour) laboratory period.
Four credit hours.

PHYSICS 25.

Physics III.

Continuation of Physics 24. Basic concepts in modern physics. Three lectures.
Three credit hours.

PHYSICS 36.

Earth Science.

Origin and age of the earth. Weather and climate. Terrestrial magnetism. Processes of erosion. Glaciers and glaciation. Isotasy. Volcanism. Minerals. Rock structure. Earthquakes. Geologic history. Principles of ecology. Man's impact on the environment. Elective for non-science majors. Three lectures. *Three credit hours.*

PHYSICS 39.

History and Philosophy of Science I.

A study of some of the major scientific theories with primary emphasis on physics from Democritus and the Greek Atomists to the present time with consideration of their impact on contemporary scientists and philosophers. The course will consider development of the scientific method and will examine the structure and validation of scientific theory. In the first semester the study will extend from the period of the Greeks to the development and acceptance of the heliocentric system. Elective for non-science majors. Three lectures.

Three credit hours.

PHYSICS 40.

History and Philosophy of Science II.

A study will be made of major contributions to science from Copernicus to the present time with typical cases in biology and chemistry; in physics special emphasis will be placed on relativity, the uncertainty principle, the wave-particle duality in nature, the question of reality and justification of the mental construct in the subatomic. Three lectures.

Three credit hours.

PHYSICS 41.

General Physics.

Elective for non-science majors who have had no previous courses in physics.

Topics are selected from the physical fields of mechanics, heat, sound, light, electricity, magnetism, atomic, nuclear, and astrophysics. Three lectures.

Three credit hours.

PHYSICS 42.

General Physics.

Continuation of Physics 41. Three lectures.

Three credit hours.

PHYSICS 49.

Introduction to Modern Physics I.

Gravitational, electric and magnetic fields. Diffraction, interference and polarization of light. Atomic spectra. Atomic structure. Electro-magnetic radiations. Solid state. Relativity. Lasers. Electron optics. Elective for non-science majors who have had a general physics course. Three lectures.

Three credit hours.

PHYSICS 50.

Introduction to Modern Physics II.

Continuation of Physics 49. Radioactivity. Transmutation. Beta gamma rays. Nuclear disintegration. Cosmic rays. Particle accelerators. Neutron and gamma ray reactions. Special atomic and nuclear effects. Fission and fusion. Nuclear energy. Elementary particles. Prerequisite: Ph. 49. Three lectures.

Three credit hours.

PHYSICS 51.

Radiological Physics.

Constituents of Matter. Ionizing Radiation. Detection and Measurement. Effects on Tissues and Organs. Radiation Exposure. Genetic Effects. Shielding. Monitoring. Instruments. Medical Evaluation. Radiation Injury. Radiation Sickness. Permissible levels of Exposure. Concept of Dose. Dose Computation. Protective Measures. Use of Radioactive Isotopes in Medicine. Laboratory experiments in the use of radiological instruments and monitoring techniques will be offered. Elective for pre-medical students. Three lectures.

Three credit hours.

PHYSICS 54.

Astronomy.

A survey of the present view of the universe and an examination of the assumptions, measurements, and reasoning, upon which astronomical knowledge is based. Lectures will be supplemented with direct observation of astronomical phenomena. Three lectures.

Three credit hours.

PHYSICS 81.

Introduction to Astrophysics.

A survey course at the introductory level of selected topics of current interest in astrophysics such as solar physics, neutron stars, quasars and various cosmological models for the origin of the universe. This course is designed for science majors who have had one year of general physics. Three lectures.

Three credit hours.

PHYSICS 109.

Modern Physics I.

Special relativity. Wave-particle dualities; atomic structure and spectra; x-rays. Particle detectors and accelerators. Nuclear structure and reactions. Molecular and solid state physics. Three lectures. Prerequisite: Ph. 21, 22 or 23, 24.

Three credit hours.

PHYSICS 110.

Modern Physics II.

Continuation of Physics 109. Three lectures. Prerequisite: Ph. 109.

Three credit hours.

PHYSICS 111.

Modern Physics Laboratory.

Taken concurrently with Physics 25 or Physics 109.

Three credit hours.

PHYSICS 115.

Optics.

"Optics" as used in this course covers the electromagnetic spectrum from ultra-violet through the visible and infrared to microwaves. Geometrical optics is largely an extension of principles developed in previous courses. Physical or wave optics includes such topics as interference, diffraction, and polarization. Covered also are the fundamental principles involved in the generation and production of radiation in this spectral band. Three lectures. Prerequisite: Ph. 21, 22 or Ph. 25.

Three credit hours.

PHYSICS 116.

Optics Laboratory.

Take concurrently with Physics 115.

Three credit hours.

PHYSICS 120.

Theoretical Mechanics.

Newton's laws of motion, three-dimensional kinematics and dynamics, central force motion, motion of a system of particles, generalized coordinates, constraints, Lagrangian and Hamiltonian dynamics, rigid body dynamics, inertia and stress tensors. Three lectures. Prerequisite: Ph. 21 or Ph. 23.

Three credit hours.

PHYSICS 130.

Electricity & Magnetism.

Electrostatics, Laplace's and Poisson equations, dielectrics, electrostatic energy, electric current, magnetic fields, electromagnetic induction, magnetic energy, Maxwell's equations and their application to wave propagation in various media, reflection, waveguides. Electrodynamics of an electron. Three lectures. Prerequisite: Ph. 22 or Ph. 24.

Three credit hours.

PHYSICS 131.

Electrical Measurements Laboratory.

Taken concurrently with Physics 130.

Three credit hours.

PHYSICS 135.

Electronics.

A/C circuit analysis and filter theory. A study of the characteristics of semiconductor diodes, transistors, vacuum and gas filled electron tubes. The basic circuits in which these devices are used. Three lectures. Prerequisite: Ph. 22 or Ph. 24.

Three credit hours.

PHYSICS 136.

Electronics Laboratory.

Taken concurrently with Physics 135.

Three credit hours.

PHYSICS 141.

Atomic Physics I.

The first semester of a two semester course on special relativity, quantum theory, wave mechanics, atomic and molecular physics. Three lectures. *Three credit hours.*

PHYSICS 142.

Atomic Physics II.

Continuation of Physics 141. Three lectures. Prerequisite: Ph. 141.

Three credit hours.

PHYSICS 154.

Theoretical Physics.

Selected topics in theoretical physics.

Three credit hours.

PHYSICS 155.

Nuclear Physics.

Nuclear models, radioactive decay, nuclear reactions, nuclear forces, particle detectors and accelerators, nuclear instrumentation, counting statistics. Three lectures. Prerequisite: Ph. 142.

Three credit hours.

(Not offered 1971-72)

PHYSICS 156.

Nuclear Physics Laboratory.

Taken concurrently with Physics 155.

Three credit hours.

(Not offered 1971-72)

PHYSICS 157.

Nuclear Physics.

Radioactive decay, nuclear reactions, particle detectors and accelerators, nuclear instrumentation, counting statistics. One lecture and laboratory. *Four credit hours.*

PHYSICS 159.

Thermodynamics and Statistical Mechanics.

Review of thermodynamics and its laws. Entropy, thermodynamic potentials and conditions of equilibrium. Applications of thermodynamics to physical, chemical and biological systems.

Kinetic theory of gases and Maxwell's distribution law of velocities, transport properties of gases.

Statistical mechanics and its basic assumptions. Probability and entropy relationship; canonical and grand canonical distributions. Statistical form of the thermodynamic state functions. Applications of statistical mechanics to classical systems: Maxwell-Boltzmann statistics and its applications; quantum mechanical systems: Fermi-Dirac statistics and its applications; Bose-Einstein statistics and its applications. Four lectures. *Four credit hours.*

PHYSICS 160.

Solid State Physics.

Introduction to solid state of matter, solid state of matter and other sciences, geometrical crystallography and crystal structure. Crystal symmetry. X-ray diffraction and the reciprocal lattices.

Interatomic forces and the basic solid types. Atomic packing in crystals. Imperfections of solids and dislocation. Physics and chemistry of crystal growth. Experimental techniques for the study of solids. Properties of solids and the various models to explain those properties. Mechanical (elastic, lattice dynamics), thermal (theories of specific heats, thermal expansion, thermal conductivity), optical (absorption, emission, luminescence), electrical (dielectric properties and crystal field theory), magnetic (magnetic field theory, Curie-Weiss-Langevin-Brillouin theories of magnetic susceptibilities), magnetic resonances and low temperature physics.

Metal physics and free electron model. Boltzmann-transport equation and various transport phenomena. Ohm's law, Wiedmann-Franz's law, Hall effect, Thermionic emission, cold emission, photo-electric and photo-conductivity effects.

Quantum theory of solids and the band structure. Semi-conductors, their physics and devices. Three lectures. Prerequisite: Ph. 159. *Three credit hours.*

PHYSICS 161.

Solid State Laboratory.

Taken concurrently with Physics 160.

Three credit hours.

(Not offered 1971-72)

PHYSICS 201, 202.

Undergraduate Research.

A program of supervised research above and beyond the level of regular course offerings. The work may be theoretical and/or experimental and is designed to bridge the gap between the undergraduate and postgraduate levels.

Six credit hours.

PHYSICS 203, 204.

Physics Seminar.

Six credit hours.

PHYSICS 205, 206.

Independent Study.

Six credit hours.

DEPARTMENT OF

Political Science

Professor: Higgins

Associate Professors: Duff, Ford

Assistant Professors: Copson, Dommel, Dufault, Odell (*Chairman*)

Instructor: Green

Visiting Lecturer: O'Keefe

POLITICAL SCIENCE

Political Science is the systematic study of man's political behavior in society. It studies political activity as it is affected by changing political processes, developments, and situations, the motivation and action of individual leaders, public officials, social and economic groups, public opinion, and the process by which public policy is fashioned. It investigates the nature and purpose of political authority, the principles upon which it rests, the role of the state in achieving the "good life", the relationship between man and his government, the struggle for control of the state, problems of legislation and administration, the legal aspects of political phenomena, judicial control of the political process, civil rights, and the relations of states in the family of nations.

A major in political science requires a minimum of ten semester courses, including Political Science 11, 12. A maximum of fourteen semester courses may be taken.

The Department participates in the national and college Advanced Placement Programs.

Honors students are afforded opportunities to participate in seminars and research projects by arrangement with the Department.

POLITICAL SCIENCE 11, 12.

Introduction to Political Science.

This course is designed to give the student an understanding of the scope, method, and objectives of the field. It examines the role of ideologies, theory and behavior in politics. It shows the relation of the study of politics to philosophy, history, and the other social sciences. The traditional, institutional, and systems approaches are examined. Particular stress is given to the role that the scientific method has in the field, and the implications that this has for political goals.

Six credit hours.

POLITICAL SCIENCE 101.

United States Foreign Policy.

The evolution of U.S. Foreign policy since World War II, with special attention to the debate over traditional versus revisionist interpretations of the American role. *Three credit hours.*

POLITICAL SCIENCE 103.

19th Century U.S. Diplomatic History, 1775-1898.

A description of this course will be found under History 107. *Three credit hours.*

POLITICAL SCIENCE 104.

20th Century U.S. Diplomatic History, 1898-1970.

A description of this course will be found under History 108. *Three credit hours.*

POLITICAL SCIENCE 105.

Political Parties in Modern Society.

A functional analysis of American political parties stressing operational and structural problems of the modern party system; special emphasis will be placed on voting behavior of the American electorate, campaigning tactics and techniques, and the use of public relations techniques to attract and hold voter allegiances. *Three credit hours.*

POLITICAL SCIENCE 106.

Pressure and Interest Group Behavior.

A systematic study of American political pressure group, including types of groups operating in the political system, their tactics, goals, and functions; special emphasis upon lobbying activities, group infiltration of administrative and regulatory agencies, and statutory controls upon such activity; selected case studies of pressure groups and their effects upon public policy and legislation. *Three credit hours.*

POLITICAL SCIENCE 107, 108.

Constitutional History of the United States.

An examination of the origin and content of the Constitution, of the nature of the federal republic and the presidential system, of the development of the Constitution and of current constitutional problems. *Six credit hours.*

POLITICAL SCIENCE 109.

Public Administration.

A survey of the political characteristics of public administration with special emphasis on the relationships between the executive, legislature, judiciary and bureaucracy in the formation of public policy. The focus will be on public administration and policy formation at the national level. *Three credit hours.*

POLITICAL SCIENCE 110.

Public Policy.

Case studies in the making of public policy in both domestic and foreign policy areas. The focus is on who gets what, why and how in the policy process; what are the barriers to and prospects for greater assertion of "the public interest" and public participation in decision-making. *Three credit hours.*

POLITICAL SCIENCE 111.

State and Local Government.

A survey of the politics of state and local government. Attention is given to the structure of government, political behavior of the voter, and political conflict at the state and local levels. *Three credit hours.*

POLITICAL SCIENCE 112.

Government and Politics of Metropolitan Areas.

The nature of the modern metropolitan phenomenon and the effect it has on government and politics. Approaches to metropolitan problems and solutions. Field studies of Metropolitan Worcester will be conducted. *Three credit hours.*

POLITICAL SCIENCE 121, 122.

Civil Rights.

Liberty and Property; Equal Protection and Racial Discrimination; First Amendment Freedoms; Procedural Due Process; The Implications of Ordered Liberty. *Six credit hours.*

POLITICAL SCIENCE 131.

The American Presidency.

An introduction of the study of the Presidency, its constitutional basis, historical growth and development, and relationships to the coordinate branches of the federal government; special attention will be paid to the expansion of the office in the twentieth century, especially in regard to domestic economic policies and international developments. *Three credit hours.*

POLITICAL SCIENCE 132.

The Politics of the Business Community.

A study of the goals and tactics of American business in the American political process; an analysis of the political impact of business firms and associations, organized as pressure groups, including their tactics, access to political decision-making structures in American government, and legislative goals; students will perform independent research into specific firms, industries, or organizations, and will be expected to present oral and written reports which will form the basis for class discussion. *Three credit hours.*

POLITICAL SCIENCE 141.

Greek Political Philosophy.

This course is offered by the Department of Classics as Classics 141.

Three credit hours.

POLITICAL SCIENCE 142.

Roman Political Ideas.

This course is offered by the Department of Classics as Classics 143.

Three credit hours.

POLITICAL SCIENCE 151, 152.

International Relations.

Major topics from the field of International Relations; including the international system and its development, the components of national power and the distribution of power, arms and arms control, conflict and conflict resolution, reason of state and the morality of nations. *Six credit hours.*

POLITICAL SCIENCE 153, 154.

Comparative Politics of the Major Western European Powers.

Survey of various approaches to the study of comparative politics in historical perspective. In-depth analysis of the political culture, structure, process, performance and development of the governments of Italy, Great Britain, France and West Germany. *Six credit hours.*

POLITICAL SCIENCE 155, 156.

The Fifth French Republic.

An intensive study of French post-war society, the performance of the Fourth Republic, Algerian problem, the emergence of the new system, de Gaulle's record and legacy, and some speculation about France's future. *Six credit hours.*

POLITICAL SCIENCE 158.

Constitutional and Legal History of England.

Origin and development of the parliamentary system and the common law. *Three credit hours.*

POLITICAL SCIENCE 161, 162.

History of Western Political Thought.

Analysis of the political thought of western civilization from Ancient Greece to the present. Readings in the first semester include works of Plato, Aristotle, Cicero, St. Augustine, St. Thomas and Machiavelli. Readings in the second semester include the works of Hobbes, Locke, Rousseau, Burke and Marx. Lectures are based on texts, the works of other political theorists, commentaries and historical sources. They attempt to draw out the significance of the various writers for their time and for our own. *Six credit hours.*

POLITICAL SCIENCE 163.

Industrial Organization and Public Policy.

This course is offered by the Department of Economics as Economics 175. *Three credit hours.*

POLITICAL SCIENCE 165, 166.

Soviet Government and Politics.

Analysis of the major forces in Soviet political development with emphasis on the interrelation between historic and ideological factors and on the roles of the Communist Party, the bureaucracy, the intelligentsia and the military. *Six credit hours.*

POLITICAL SCIENCE 168.

The Contemporary Middle East in World Affairs.

The politics of the Middle East from the end of World War I to the present. Emphasis is placed upon the influence of the West on the social and political transformation of the area. *Three credit hours.*

(Not offered 1971-72)

POLITICAL SCIENCE 169.

Diplomacy of Nineteenth Century Russia.

This course concerns Russia and the great European powers throughout the Nineteenth Century. It will focus particularly on Russian expansion in Central

Asia, and Russian relations with the Ottoman Empire in the Balkans, while examining political doctrines and cultural movements in Russia which molded and shaped Russian foreign relations.

Three credit hours.

(Not offered 1971-72)

POLITICAL SCIENCE 171.

Soviet Foreign Policy: 1917 to the present.

A study of the decisive elements in the formulation and implementation of Soviet foreign policy; special attention to the impact of external circumstances and domestic policies, alliances and international organization, propaganda and economic aid.

Three credit hours.

POLITICAL SCIENCE 172.

Politics of East Central Europe since World War II.

A comparative study of Eastern European nations. Special attention will be given to the course and the impact of Sovietization and national communism in each nation.

Three credit hours.

POLITICAL SCIENCE 174.

Political Development.

The role of elites, social classes, political parties, the military, revolution and ideology in the politics of developing states.

Three credit hours.

POLITICAL SCIENCE 176.

Contemporary Christian Political Perspectives.

An analysis of the pronouncements and positions of Roman Catholicism at Vatican II and in papal encyclicals and of non-Roman Christianity in the statements of the World Council of Churches and of the National Council of the Churches of Christ in the USA.

Three credit hours.

POLITICAL SCIENCE 178.

International Organization and Policy.

A study of the history, structure and functioning of the United Nations and its specialized agencies.

Three credit hours.

POLITICAL SCIENCE 180, 181.

Permanent Problems of Politics.

The basis, functions and limits of the political order; the role and rights of the citizen; the State and its relation to society; politics and the economic order; authority vs. freedom; the control of power; the external relations of the State and the emerging inter-State system; the dynamics of political change.

Six credit hours.

POLITICAL SCIENCE 183, 184.

Current Political Issues.

An examination of some of the factors of the present crisis: race, militarism and intervention, poverty, student protest, crime and world economic inequality.

Six credit hours.

POLITICAL SCIENCE 185, 186.

Urban Politics.

A study of the political issues, processes and realities underlying urban problems

faced by municipalities in responding to social, economic and physical change.
Six credit hours.

POLITICAL SCIENCE 201, 202.

Tutorial-Seminar.

Research with individual reports on selected topics or projects. Approval of the Professor and the Department is necessary. *Three credit hours.*

POLITICAL SCIENCE 203.

Seminar in Intergovernmental Relations.

Three credit hours.

POLITICAL SCIENCE 204.

Seminar in Urban and Regional Development.

Three credit hours.

POLITICAL SCIENCE 205, 206.

Seminar in Comparative Politics.

Study of selected topics in the politics of post-industrial states. *Six credit hours.*

POLITICAL SCIENCE 207, 208.

Seminar on Urban Problems.

Study of selected urban problems, including urban violence, poverty and welfare, housing and urban renewal, education and the environment. Focus is on the nature of the problems and the conflicts that hinder their solution.

Six credit hours.

POLITICAL SCIENCE 209.

Seminar in Religion and Politics.

A study of what has brought Christians and Christian institutions into the realm of politics, and to what extent past history should serve as a basis for current Church-State relations.

Three credit hours.

POLITICAL SCIENCE 210.

Seminar on Hegel, Marx and Marxist thought of the Nineteenth and Twentieth Centuries.

Three credit hours.

POLITICAL SCIENCE 211, 212.

Seminar on the Warren Court.

A study of the personnel of the Supreme Court, its judicial restraint, congressional relations, political and bloc behavior, and constitutional policies. *Six credit hours.*

POLITICAL SCIENCE 214.

Seminar on Quantitative Approaches to Political Science.

Arguments for quantitative approaches to Political Science; data gathering; elementary techniques of data analysis; the use of the computer. Examples drawn from the current literature in Political Science and International Relations. A class project using the computer may be undertaken. *Three credit hours.*

POLITICAL SCIENCE 215, 216.

Aspects of Latin American Politics.

Political systems and patterns in Latin America; forces which facilitate or hinder political changes. Elites, masses and question of access to political power.

Six credit hours.

(Not offered 1971-72)

POLITICAL SCIENCE 219.

Seminar on Legal Issues in the International System.

A survey of important legal problems in modern international relations, including the regulation of force, recognition, human rights and the conduct of war.

Three credit hours.

DEPARTMENT OF

Psychology

Professor: Rosenkrantz

Associate Professors: O'Halloran (Chairman), Zlody

Assistant Professors: Ewald, Jasnos, McNeil

Lecturer: DeMoor

The course of studies in Psychology is made up of a core curriculum, electives in Psychology, and required courses from allied fields. The program is arranged to provide the student with undergraduate preparation for advanced study in this area as well as a breadth of view consonant with the liberal arts tradition of Holy Cross. Introductory Psychology, History and Systems of Psychology, Experimental Psychology and Laboratory, Statistics, Senior Research, and two electives in Psychology constitute the core curriculum. Courses from allied fields include: Biological Sciences, Mathematics, and Computer Science.

Individual experimental projects, seminars, and tutorials are encouraged to foster a research spirit and student-professor exchange.

PSYCHOLOGY 41, 42.

Introductory Psychology.

A general introduction to the principles of psychology as operative in motivation, learning, perception, and thinking. Application of these principles to areas of emotion, social processes, assessment of abilities, personality, and biological substrates of behavior is also stressed. This course is structured for psychology majors.

Six credit hours.

PSYCHOLOGY 43.

Contemporary General Psychology.

The contributions of psychology to an understanding of human and animal behavior are surveyed. Learning, motivation, emotion, psychological assessment, and abnormal process are among the several topics considered.

Three credit hours.

PSYCHOLOGY 44.

Statistics.

An introduction to statistical methods in the analysis and interpretation of psychological data: measures of central tendency, variability, correlational techniques and reliability of statistical measures. A brief survey of factor analysis and analysis of variance.

Three credit hours.

PSYCHOLOGY 45.

History and Systems of Psychology.

The origin of Psychology and the development of theoretical systems within Psychology are assessed. The main psychological systems: Introspectionism, Be-

haviorism, Gestalt School, Psychoanalysis, and Hormic Psychology are treated in their historical development. *Three credit hours.*

PSYCHOLOGY 47, 48.

Experimental Psychology and Laboratory.

The methods and techniques of Experimental Psychology and their application to various content areas are treated. Selected topics within the areas of sensation, perception, learning, problem solving, social process, and physiology of behavior are investigated in the laboratory. An original experiment, designed and researched by the student, is required. *Eight credit hours.*

PSYCHOLOGY 52.

Physiological Psychology.

The structure and function of the nervous system and endocrine glands are studied with reference to man's behavior. The physiological and neural aspects of motivation, emotion, learning, sensation, and perception are emphasized. *Three credit hours.*

PSYCHOLOGY 103.

Psychology of Learning.

A presentation and evaluation of the principles of learning theory. Conditioning, transfer of training, and development of human learning and memory are discussed. *Three credit hours.*

PSYCHOLOGY 114.

Abnormal Psychology.

A general introduction to the origin, development, classification, diagnosis, and treatment of psychological ills. A history of the treatment of mental illness and the theoretical basis of different schools of therapy are surveyed. *Three credit hours.*

(Not offered 1971-72)

PSYCHOLOGY 115.

Psychological Testing.

A history of psychological testing and the rationale of test construction and administration are treated. A critical evaluation of various psychological tests is offered. *Three credit hours.*

PSYCHOLOGY 116.

Psychology of Adolescence.

The physiology, psychology, and sociology of adolescence are discussed. Unit topics include physical changes and their implications, psychosexual development, basic determinants of behavior, the adolescent in the home and in the community, and adolescent problems and solutions. Each student is required to complete a research project concern with some aspect of adolescent development. *Three credit hours.*

PSYCHOLOGY 117.

Social Psychology.

Principles in interpersonal perception and human cognition serve as a framework for discussions of attitude structure and change, group processes, and aggression. The application of general principles to human interaction labs and group observation is discussed with explicit reference to existing experimental evidence. *Three credit hours.*

PSYCHOLOGY 119.

Developmental Psychology.

An analysis of the factors underlying behavior at different stages of development with an examination of the role of maturation, motivation, experience, and culture in the sequences of changes in psychological process. *Three credit hours.*

PSYCHOLOGY 122.

Theories of Personality.

A summary and evaluation of the major contemporary theories of personality are presented. Among the theories discussed are those of Freud, Jung, Sullivan, Lewin, Allport, Rogers, Murphy. *Three credit hours.*

PSYCHOLOGY 124.

Exceptional Child Practicum.

The experience of helping exceptional children is combined with theoretical discussion of problems encountered in such work. Under professional supervision, students will establish a relationship on a weekly basis with a mentally retarded, an emotionally troubled and an economically disadvantaged child. A classroom seminar will meet weekly. Course open with permission of instructor to majors who have completed Psychology 119. *Three credit hours.*

(Not offered 1971-72)

PSYCHOLOGY 125.

Culture and Personality.

The findings of an area where cultural and social anthropology are related to psychology of personality will be discussed. Contemporary schools of thought will be surveyed, methods of research will be studied and some applications will be examined. Open to majors who have completed Psychology 117.

Three credit hours.

PSYCHOLOGY 127.

Introduction to Counseling and Psychotherapy.

An historical and critical evaluation of traditional methods of counseling and psychotherapy. Psychoanalytic, behavioral, directive, and non-directive techniques will be discussed. Behavioral therapy will be especially stressed. *Three credit hours.*

PSYCHOLOGY 130.

Behavior Process.

A complex analysis of human behavior within a conceptual S-O-R framework. Motivation, behavioral process, modification strategies, basic and concrete need structures are highlighted. *Three credit hours.*

PSYCHOLOGY 133.

Social Psychophysiology.

A review evidence on the role of peripheral nervous processes in behavior. Topics include bio-feedback, cognitive control of bodily processes, psychosomatic disorders, and the use of psychophysiological indices in the study of personality and social behavior. May be used as preparation for research in psychophysiology.

Three credit hours.

PSYCHOLOGY 203.

Advanced Statistics I.

The relationship between statistical procedures and theoretical problems encountered in designing psychological experiments is presented. Topics covered include: sets, functions, probability, and distributions. This course is available to students who have completed elementary statistics requirements. *Three credit hours.*

PSYCHOLOGY 204.

Advanced Statistics II.

Complex analyses of variance, trend analysis, and analysis of covariance are related to theoretical issues in psychological research. This course is available to students who have completed Psychology 203. *Three credit hours.*

PSYCHOLOGY 207.

Ethical Problems in Behavioral Research and in Clinical Psychology.

(1970-1 course title was Human Values in Behavioral Research)

The first part of the course will examine the relationship of power, sponsorship, availability of the results on the inherent conflict of the rights of the researcher and the rights of those studied. The second part will deal with problems arising out of the values the clinical practitioner holds and the rights of the recipient of the help. Consent of minors, confidentiality, etc., will also be discussed.

Three credit hours.

PSYCHOLOGY 211, 212.

Research Projects.

Students who are especially interested and who have sufficiently high grades may assist faculty members in their research. Their assistance may take the form of library research, bibliography organization, data computation and analysis, and administration of experiments. Under faculty direction, students may undertake their own projects. Either both semesters or one semester may be taken.

Six credit hours.

SEMINARS AND TUTORIALS

PSYCHOLOGY 213.

Drugs and Human Behavior.

The influence of drugs on man's behavior. The physiological, psychological, and social consequences of various psychoactive agents. Examination of tranquilizers, anti-depressants, psychotometic, and addicting drugs. Prerequisite: Physiological Psychology.

Three credit hours.

PSYCHOLOGY 215, 216.

Topics in Contemporary Psychology.

Different problem areas in contemporary psychology are discussed in depth. Selection has included: Cognition and Thinking; Group Dynamics; Philosophy of Science; and Motivation. Either both semesters or one semester may be taken.

Six credit hours.

DEPARTMENT OF

Sociology

Professor: Imse

Associate Professor: Johnson (Chairman)

Assistant Professors: Al-Khazraji, Fallon, Fitzsimmons, McMillan

Instructor: Holland

The program for majors in sociology is designed to provide a critical understanding of the elements of theory and methodology, knowledge of the social institutions and processes characteristic of society, and an examination of social problems and stresses which afflict society. The curriculum is broadly conceived to serve majors with diverse educational and career interests, ranging from graduate studies in sociology, social work and urban affairs to careers in business, government, medicine, and law. Offerings include both seminar and field research courses, and the department maintains a laboratory-workshop in conjunction with its field work operations.

Ten semester courses constitute the major. All majors are required to take the general course (Sociology 51) and one theory course (Sociology 141 or 142). Majors planning graduate studies in sociology, social work or allied disciplines must also take both research methods (Sociology 123) and social statistics (Sociology 124); all other majors must take either Sociology 123 or 124. The remainder of each major's program will be arranged in consultation with his departmental advisor.

Sociology 51 is a prerequisite for all courses except Cultural Anthropology (Sociology 71) and may be taken in either the freshman or sophomore year. 100-level courses may be elected by any student who has had Sociology 51. 200-level courses are reserved for junior and senior majors except by permission of the instructor.

SOCIOLOGY 51.

Introduction to Sociology.

An introduction to the discipline of sociology, its theory and research, with special emphasis on contemporary America.

Three credit hours.

SOCIOLOGY 71.

Cultural Anthropology.

An introductory survey of the field. Comparative analysis of social organizations.

Applied anthropology.

Three credit hours.

SOCIOLOGY 111.

Social Problems.

A consideration of some major problems of industrialized and industrializing societies, notably alcohol, crime, juvenile delinquency, and family disorganization, in terms of systemic factors involved in generating problems and the effects of the problems on the system. *Three credit hours.*

SOCIOLOGY 115.

Racial and Ethnic Relations.

Comparative analysis of selected minority groups within a systematic cross-cultural framework of dominant-minority relations. Special emphasis will be given to the concepts of race and ethnicity in contemporary America. *Three credit hours.*

SOCIOLOGY 117.

Criminology.

Description and analysis of theories of crime causation, the modes of societal responses to crime, the relationships between crime and patterns of legitimate society, and the specific problems encountered in correctional programs. *Three credit hours.*

SOCIOLOGY 123.

Methods of Social Research.

Introduction to the application of the scientific method to the analysis of social phenomena. Review of methodological orientation in sociology; emphasis on formal steps in research design, including definition of problem, hypothesis construction, development of instruments of observation, collecting and processing data for computer analysis, and interpretation of data. Opportunities for field research. *Three credit hours.*

SOCIOLOGY 124.

Social Statistics.

A survey of the basic statistical concepts used in the analysis of sociological data. Both descriptive and inductive statistical techniques are studied. Special emphasis will be given to the problem of statistical inference, probability theory, multiple regression, and the application of certain statistical tests such as chi-square. A brief introduction to selected advanced topics will also be offered. *Three credit hours.*

SOCIOLOGY 131.

Urban Community Organization.

The American urban community is viewed as a social system. Emphasis is given to urban problems, urban development, social welfare and social policies, the ideology and issues of urban planning, and the role of government, social agencies, and the citizen. Course requires agency field work in Worcester. *Three credit hours.*

(Not offered 1971-72)

SOCIOLOGY 135.

Urban Sociology.

Introduction to the study of urban institutions and urban social relations. Analysis of ecological, institutional and social-psychological elements in urbanization and urban social organization. *Three credit hours.*

SOCIOLOGY 141.

Development of Social Theory.

A descriptive and critical study of the development of sociological theory from Comte to the present. Principal attention is given to the works of Durkheim, Max Weber, and Simmel. *Three credit hours.*

SOCIOLOGY 142.

Contemporary Sociological Theory.

An elaboration of a frame of reference for the analysis of social systems in terms of contemporary theory. *Three credit hours.*

SOCIOLOGY 155.

Social Psychology.

This course aims to acquaint students with the role of social and cultural factors in the behavior of individuals. Included will be such topics as: attitude development and change, prejudice, language and communication, small group processes, the relationships of culture and personality, and interpersonal perception. *Three credit hours.*

SOCIOLOGY 161.

Sociology of Religion.

Functional and phenomenological approaches to the Sociology of Religion. Religious experience, its institutionalization, and the consequent dilemmas. Religion in contemporary American society. *Three credit hours.*

(Not offered 1971-72)

SOCIOLOGY 166.

The Family.

The family as a social system, functionally and historically, with special reference to American urban life. Family process, culture, and personality development. The family and related social systems. *Three credit hours.*

SOCIOLOGY 170.

Social Change.

An overview of the major theories and studies of change and development in society and community with respect to the sources, direction, the rate and degree, agents, and planning of change in modern industrial and emerging nations. Relevant theories and research in disciplines related to sociology will be examined in depth. *Three credit hours.*

SOCIOLOGY 206.

Population.

Issues and problems of population change; overpopulation; zero population growth. Population growth, composition and distribution as experienced around the world. Trends in fertility and mortality; migration; population theory; and population policy. *Three credit hours.*

SOCIOLOGY 208.

Immigration.

Immigration as a determinant of the character of American culture. Patterns

of immigration to the Americas. Internal migration with special reference to racial distribution. Immigration and the processes of assimilation and conflict.

Three credit hours.

SOCIOLOGY 215.

Sociology and Law.

Focuses on the relationship between legal systems of diverse societies in terms of substantive laws, procedural prescriptions, and legal ideologies. Current historical and anthropological materials are utilized to demonstrate the range of characteristics and modes of divergence between various legal systems. *Three credit hours.*

(Not offered 1971-72)

SOCIOLOGY 237.

Special Topics in Urban Sociology.

Special Topics in sociological theory and research on urban social systems, urbanization and processes of urban change. Prerequisite: Sociology 135.

Three credit hours.

SOCIOLOGY 245.

Class Conflict and Social Change.

The dichotomous and the integral models of society considered in relation to the explanation of social change in industrial society.

Three credit hours.

SOCIOLOGY 246.

Class, Status and Social Mobility.

Comparative study of the unequal distribution of privilege, prestige and power. The changing class structure and patterns of social mobility. The relationship of social stratification to bureaucracy and mass in modern society.

Three credit hours.

SOCIOLOGY 263.

Medical Sociology.

Focuses on the institution of modern medicine with emphasis on the social epidemiology of disease, the organization of medical care, and the social roles of those responsible for this care. This includes analysis of the problems of defining illness, the processes of seeking treatment, and the role of the sick person. Major trends are analyzed and cross-cultural comparisons are made. *Three credit hours.*

SOCIOLOGY 264.

Political Sociology.

Examination of major theorists and of sociological research on political processes. Emphasis will be on community and national power systems including the roles of parties, bureaucracies and the populace.

Three credit hours.

SOCIOLOGY 267.

Industrial Sociology.

A study of complex organizations centered around those units in which men are organized to produce a product or service through their work. These include industry, governmental agencies and the military. Specific attention is given to organizational function, bureaucracy, the structure of work groups, supervision and managerial control, communication in formal organization and its expression,

social change in the organization, and the relations of industrialization to the total society.

Three credit hours.

SOCIOLOGY 268.

Bureaucracy.

Formal organizations and their informal dynamics. Bureaucracy in contemporary industrial, political, and military systems.

Three credit hours.

(Not offered 1971-72)

SOCIOLOGY 276.

Social Structure and Change in the Middle East.

Analysis of the major social institutions of the contemporary Middle East, with special reference to the interrelationships between Islamic community organization, value systems, personality, demographic structure, ethnic minorities, and current ideologies. The processes and consequences of modernization are examined within the context of traditionalism, industrialization, urbanization.

Three credit hours.

(Not offered 1971-72)

SOCIOLOGY 298, 299.

Special Projects.

Program of seminars, directed readings and supervised independent study open to selected junior and senior majors. Offerings will vary from year to year. Ordinarily projects will be approved for one semester; in special instances approval may be given for a full year project.

Three or six credit hours.

DIVISION OF

Theatre Art

Assistant Professor: Ilko

Instructor: Becker

Lecturer: Herson (Director),

The Division of Theatre Art offers a curriculum designed to develop theatre artists with a sound humanistic education. To this end students who wish to pursue the complete theatre curriculum are urged to select English, modern languages, or classics as their major field of concentration, so that they may obtain the strongest possible education in dramatic literature. Theatre students are also urged to take two half-courses in the history of art or to major in Fine Arts. All theatre art students, but especially those who plan to pursue graduate study in the field, are advised to gain proficiency in two modern languages.

The curriculum of the division is designed around a core of courses necessary for every theatre artist, whatever his speciality. The core courses are: Theatre in Western Civilization (two courses); Basic Technical Theatre Practice; Introduction to Play Direction; Introduction to Stage Design: Theory; and Basic Acting Skills I and II.

Two sequences of advanced courses, one for potential actors and one for potential stage designers, are offered. Within the acting sequence allowance is made for a student to choose two courses in advanced directing.

Registration in any course in the division may be made only by permission of the instructor of the course and the Director of the Division.

Fenwick Theatre, a recently constructed and fully equipped thrust-stage theatre, houses the annual five- or six-play season of the Division of Theatre Art. The College has enlisted a semi-professional company, Entr'-Actors Guild, Inc. to act and work with the students in producing the major season under the administration of the faculty of the Division of Theatre Art. The annual season in Fenwick Theatre, consequently, serves several purposes. It provides the students and residents of the Worcester area with theatrical productions of high quality. It also serves as a laboratory where students of the Division and other interested persons may learn the arts and skills of the theatre. Finally, it is a showcase where students of the Division, after they have developed sufficiently through their course work, may practice their art for a discerning public.

All students and faculty of the Worcester Consortium colleges partic-

icipating in the theatre program may apply for acting and staff positions for plays of the annual season. Other persons may do so by permission of the Director of the Division and the director of the play for which they apply.

FI51a. THEATRE IN WESTERN CIVILIZATION I: THEATRE FROM THE GREEKS TO THE RENAISSANCE.

FI52b. THEATRE IN WESTERN CIVILIZATION II: THEATRE OF THE EIGHTEENTH AND NINETEENTH CENTURIES IN EUROPE.

FI53a. THEATRE IN WESTERN CIVILIZATION III: THE AMERICAN THEATRE; MODERN AND CONTEMPORARY THEATRE.

A three-semester sequence of courses which surveys Western theatre from its development in early Greece to the present. Included will be a study of types of theatres, techniques of theatre architecture, and the methods, techniques, and results of stage design and costume in their historical context; a survey of acting, directing, and production methods and their interaction with the audience; the emergence of the national theatres of Western civilization and their historical and cultural significance; and a survey of the major eras of dramatic literature and criticism as well as other theatrical genres (mime, ballet, opera, etc.). Taught at Clark University. *Three semester hours each semester.* Mr. Schroeder

THEATRE ART 13.

The Theatrical Experience.

Principles for the critical perception of theatre art. Primarily for non-theatre students. *Three credit hours.*

THEATRE ART 91.

Introduction to Stage Design: Theory

A course intended to acquaint the student with the basic steps involved in the creation of stage settings. It is understood that students taking this course will not necessarily have a major interest in theatre art, and that this course will give a basic understanding of the designer's contribution to the theatrical embodiment of dramatic literature. The course will include a general discussion of design methods such as ground plan, compositional elevation, color theory, and stage lighting. *Three credit hours.*

THEATRE ART 92.

Introduction to Stage Design: Technique.

An introductory course in design for the theatre, exclusively for students who have a strong interest in the visual aspects of production and are planning to continue the study of stage design.

The twofold aim of this course is (1) to increase the student's ability to find

in the playwright's text a stageworthy idea that will serve as a basis for theatrical production, and (2) to provide the student with firm practical knowledge of the fundamental methods of scene design and stage lighting.

The student will be expected to master fundamentals of mechanical perspective and other scenographic techniques such as ground plans, working drawings, and light plots for the stage. Prerequisite or corequisite: One course in drawing and painting, and/or submission of sketches or similar materials which demonstrate some talent in the graphic arts; Basic Technical Theatre Practice (may be taken in same semester). *Three credit hours.*

THEATRE ART 93.

Basic Technical Theatre Practice.

Classroom instruction in the theories and techniques of the building, painting and lighting of stage settings; organization and operation of production crews; the fundamentals of make-up. Laboratory hours to be arranged in coordination with the schedule of the major season and/or studio productions. This course is presented at the beginning of the curriculum so that the student understands by first-hand acquaintance that to create a complete work of theatre art requires hard practical planning and work. *Three credit hours.*

THEATRE ART 95.

Introduction to Play Directing.

Theory of translation of the play script into theatrical imagery. The basic techniques of play selection, casting, scheduling and conducting rehearsals, composition, picturization, movement, rhythm, and pantomimic dramatization. Practice of the basic techniques will be done either in classroom exercises or in laboratory studio productions, or both, according to the needs of individual students. *Three credit hours.*

THEATRE ART 97.

Basic Acting Skills I.

Study and intensive practice of the basic techniques of producing good voice and speech, relaxation, breath control, phonation, and resonance for vocal tone, proper formation of the sounds of English and correction of regional accent. Laboratory in stage movement. *Three credit hours.*

THEATRE ART 98.

Basic Acting Skills II.

Further development of the techniques learned in Basic Acting Skills I. Elementary work in the interpretation of a role. Prerequisite: Basic Acting Skills I. *Three credit hours.*

THEATRE ART 191.

Historical Styles of Stage Design.

A course providing a series of opportunities to continue drafting and rendering designs for the theatre. Problems will be selected from classics of dramatic literature which represent important epochs in theatre history. The student will be expected to expand his knowledge of the theatre of these periods and of their art and architecture, and, basing his ideas firmly upon research in the given styles, to evolve a stage design for a modern production of the plays assigned. Prerequisites: Introduction to Stage Design: Technique. Art History. Theatre in Western Civilization I, II, or III. *Three credit hours.*

THEATRE ART 192.

Theatrical Styles of Stage Design.

A course providing special emphasis on the rendering of designs and painter's elevations for the stage. Students will be given problems in design for many different types of theatrical entertainments such as opera, ballet, modern dance, musical comedy, and circus. These problems should challenge the student's visual imagination and allow him to employ various media in the creation of designs. Projects from this course should exhibit the designer's ability and versatility in theatrical design and provide a portfolio of sketches required for admission to graduate study in theatrical design. Prerequisite: Introduction to Stage Design: Technique.

Three credit hours.

THEATRE ART 193.

Improvisations for the Theatre.

A graduated system of problems and theatre games designed to train the student to free himself for concentration and spontaneous effort to create a situation imaginatively and to play a role in it.

Three credit hours.

(Not offered 1971-72)

THEATRE ART 195.

Styles of Acting

Analysis of the varieties of practice of the actor's art from the Greeks to the present day and of the historical, social, and aesthetic causes of the various styles. Each student will be required to perform in a sample of each of the principal styles and possibly to direct samples of the styles. In addition, each student will be required to submit papers on a chosen specialty or specialties. Prerequisite: Basic Acting Skills I and II.

Three credit hours.

THEATRE ART 197.

Readers' Theatre.

Theory and practice of interpreting the meaning of the printed word, and a development of skill in the reading of drama.

Three credit hours.

THEATRE ART 295.

Scene Study I.

Development to the level of class performance of roles in scenes and one-act plays; assigned research; analysis of a major role scene by scene. Admission by permission of instructor. Prerequisite: Styles of Acting.

Three credit hours.

THEATRE ART 296.

Scene Study II.

Students prepare scenes for class and/or laboratory performance and criticism. Each student keeps a written record of the research, materials, and techniques used in preparing the roles he plays and a critical diary of rehearsals, performance, and class evaluation of performance. Prerequisites: Scene Study I and permission of instructor.

Three credit hours.

THEATRE ART 297.

Advanced Play Directing I.

Special topics and problems in the theory and practice of directing. Prerequisite: Introduction to Play Directing.

Three credit hours.

THEATRE ART 298.

Advanced Play Directing II.

A continuation of Advanced Play Directing I.

Three credit hours.

THEATRE ART 299.

Theatre Tutorial.

Directed study in selected theatre topics. May be taken a maximum of three times, with different topics each time. Prerequisite: permission of instructor and of the Director of the Division.

Three credit hours.

DEPARTMENT OF

Theology

Professor: W. V. E. Casey

Associate Professors: Brooks, Burke, Delaney, Forde, McGrady, J. Walsh

Assistant Professors: Donahue, Donnelly (Acting Chairman), Lindberg, McNearney, Sanks

Instructors: Kline, E. McCarthy

Lecturer: Roberts

Visiting Lecturers: Bresnahan, Saldarini, A. Smith

The application of liberal learning to religious questions has produced that form of systematic discourse which is called theology. In the category of major cultural phenomena to which authentic and comprehensive scholarship must give attention, a full awareness of man's basic orientation demands serious study of the great religious traditions of East and West. Further, an understanding of religion and its historical significance as a factor in political, social, and economic change is essential for an education that claims to be liberal.

It is for the purpose of initiating and fostering such a mature confrontation with the meaning of man, with oneself, and with the existence and relevance of God to human life, that the Department of Theology recommends its offerings to all students.

Major Program in Theology

Theology majors must complete ten (10) semester courses in theology. Three of these will be foundational courses in theological methods, biblical theology, and historical theology; and one will be a guided research project, usually undertaken in Senior year. Successful execution of this project will normally require a reading knowledge of either French or German. The remaining six courses will be selected by the student with the guidance of his Advisor. Students planning to do graduate studies in Theology are expected to take additional courses in the Department and in related fields, such as Classical Languages and Philosophy.

Special Programs

Seminar, tutorial reading programs and individual research projects are available to the qualified student by arrangement with the department chairman.

BIBLICAL THEOLOGY

THEOLOGY 11.

Biblical Literature: Old Testament

Fr. J. McGrady

An introduction to the origins of the Judaeo-Christian tradition as reflected in the literature of the Old Testament.

Three credit hours.

THEOLOGY 21.

Prophecy in Ancient Israel (Seminar)

Fr. J. Brooks

A seminar directed toward an analysis of Israelite prophecy seen in its relationship to history, covenant, politics, ethics and eschatology.

Three credit hours.

THEOLOGY 22.

Prophets and Wisdom Literature (Seminar)

Fr. J. McGrady

A seminar devoted to Wisdom Literature and to Israelite prophecy in its relationship to Israel's Messianic hopes, her attitudes toward the monarchy, the vocation of Israel and the Covenant.

Three credit hours.

THEOLOGY 23.

Old Testament: The Wisdom Literature (Seminar)

Fr. W. V. E. Casey

A literary and theological analysis of Israel's humanist and existentialist literature, particularly the Book of Job, with special reference to the modern human condition.

Three credit hours.

(Not offered 1971-72)

THEOLOGY 31.

Biblical Literature: New Testament

Mr. L. Kline or

Fr. E. McCarthy

An introduction to the origins of the Judaeo-Christian tradition as reflected in the literature of the New Testament.

Three credit hours.

THEOLOGY 32.

Development of the Early Church

Mr. L. Kline

A survey of the history and literature of the early church in the second and third centuries C.E. Attention will be given to the internal problems of the church and to its external relationships with the State.

Three credit hours.

THEOLOGY 41.

New Testament Development of the Decalogue (Seminar)

Fr. J. Donahue

(Pre-requisite: Any course in Old Testament)

The Decalogue and the Sinaitic Covenant. Religious background to Israel's Criminal Law. The understanding of each commandment in Ancient Israel. The Christian development of the decalogue as evidenced in the New Testament.

Three credit hours.

THEOLOGY 42.

Apocalyptic Literature (Seminar)

Rev. Mr. A. Saldarini

The rich imagery and cosmic themes of apocalyptic literature will be traced from the later books of the Old Testament, through the non-Biblical literature, to the New Testament. The development of a world view, themes and literary expression will be stressed along with the historical background of this literary tradition.

Three credit hours.

THEOLOGY 43.

Jesus and the Gospels (Seminar)

Mr. L. Kline

A seminar dealing with the problems of reconstructing a 'life of Jesus' and the use of the gospels as 'sources.' Attention will be directed to texts of the synoptic gospels. *Three credit hours.*

THEOLOGY 44.

Pauline Literature (Seminar)

Mr. L. Kline

A seminar on the thought and writings of Paul understood against the background of the problems being faced. Some time will then be given to the later use and interpretation of Paul in the early church. *Three credit hours.*

THEOLOGY 45.

The Origins of Judaism (Seminar)

Rev. Mr. A. Saldarini

The thought and history of the Jews will be traced from their exile and return to Israel in the sixth century B.C. down through the time of Christ and on to the second century A.D. Sources will be the Old Testament's later books, and New Testament, non-Biblical books, Dead Sea Scrolls, and Jewish oral law. *Three credit hours.*

THEOLOGY 46.

New Testament Exegesis (Seminar)

Mr. L. Kline

(Pre-requisite: one semester classical Greek)

A seminar designed to introduce students to the tools, methods and practice of exegesis of texts in the New Testament. *Three credit hours.*

HISTORICAL THEOLOGY

THEOLOGY 51.

Christian Denominations

Fr. J. McGrady

A study of the origins, development and doctrines of the prominent Protestant denominations on the American scene. *Three credit hours.*

THEOLOGY 52, 53.

Aspects of Religion in America: I & II

Dr. C. McNearney

An examination of selected topics confronting religion in America today in the light of our past history. *Six credit hours.*

THEOLOGY 54.

Theology of History

Fr. E. McCarthy

A consideration of the various philosophical and theological meanings of the historical process with particular attention to be given to the full Christian dimension of history that was initiated by the coming of Christ. *Three credit hours.*

THEOLOGY 55.

Introduction to St. Augustine

Fr. W. A. Carroll

A textual analysis of the *Confessions of St. Augustine*, with selected readings on his theology of grace and redemption. *Three credit hours.*

THEOLOGY 71, 72.

Catholic Social Reform: I & II

Fr. R. Burke

(I) The influence of the French and Industrial Revolutions, economic liberalism, communism and socialism, Catholic social pioneers, the *Kulturkampf*, and the Risorgimento in shaping Catholic social reforms culminating in the *Rerum Novarum* of Pope Leo XIII. (II) The social encyclicals of Popes Pius XI and XII, John XXIII, and Paul VI; the social teachings of Vatican II: the Church's position on current social questions.

Six credit hours.

SYSTEMATIC THEOLOGY

THEOLOGY 111.

God: Is He? Was He? or Will He Become?

Fr. T. H. Sanks

A consideration of the problem of God for the contemporary man. What foundation in contemporary experience is there for talk about God? What is the relation of a conception or notion of God to the possibility of his existence? An exploration of the static vs. the dynamic, the personal vs. the impersonal notions of God. Readings in Feuerbach, Robinson, Gilkey, Van Buren and Whitehead.

Three credit hours.

THEOLOGY 121.

Theological Methods (Seminar)

Staff

A seminar for Majors (not exclusively) investigating hermeneutics from the methodological perspective of Biblical, Systematic and Historical Theology.

Three credit hours.

THEOLOGY 131, 132.

Protestant Thought I & II

Dr. C. Lindberg

A two-semester sequence focusing on (I) Luther, Hume, Kant, Schleiermacher, Hegel, Feuerbach, and (II) Harnack, Kierkegaard, Ritschl, Baur, Bultmann, Barth and Tillich.

Six credit hours.

THEOLOGY 141.

Lutheran-Catholic Dialogue (Seminar)

Dr. C. Lindberg

Fr. T. H. Sanks

A seminar focusing on the following areas of inter-confessional dialogue: Justification (Grace), Law and Gospel, Eucharist, Authority and the Church, Scripture and Tradition. The primary materials will be the study documents and papers prepared by scholarly participants in recent dialogue.

Three credit hours.

THEOLOGY 142.

Process Theology (Seminar)

Fr. J. Donnelly

A study of the neo-classical theology of Charles Hartshorne. Absolute-relative aspects of God: dipolarity, surrelativism, panentheism. Priority of Becoming over Being. Consonance (or dissonance) of philosophical and religious ideas of God.

Three credit hours.

(Not offered 1971-72)

THEOLOGY 143.

Theologies of Barth, Bultmann & Tillich (Seminar)

Dr. C. Lindberg

A study of their respective methodologies in the context of their historical develop-

ment and the present ecclesiastical-theological milieu. Primary sources will be used.
Three credit hours.

THEOLOGY 144.

Ecumenical Sacramental Theology (Seminar)

Fr. C. Delaney

Following the three Christian traditions, (Orthodox, Protestant, Catholic) the course will treat (1) sacramental theology IN GENERAL in its historical setting and contemporary developments; (2) in the same three-faceted tradition, the INDIVIDUAL sacraments will be treated with special emphasis on modern developments, speculations and proposals.

Three credit hours.

(Not offered 1971-72)

THEOLOGICAL ETHICS

THEOLOGY 151.

Contemporary Christian Morality

Dr. V. Forde

An evaluation of contemporary Christian thought and practice in major areas of ethical concern. An in-depth discussion of crucial moral questions in an age of situationism and ethical relativism.

Three credit hours.

THEOLOGY 152.

Christian Marriage and Modern Thought

Fr. C. Delaney

While developing a theology of marital and familiar relations, the course emphasizes today's intellectual climate. Thus, special consideration will be given to evolving legislation on ecumenical marriages, responsible parenthood and related questions (e.g. abortion, sterilization, artificial insemination), *pre, in* and *post* marital sex (the "sexplosion", "new" morality), fresh thinking on divorce, agitation about sex education, and other current elaboration.

Three credit hours.

(Not offered 1971-72)

THEOLOGY 171.

Toward a Theology of Marriage (Seminar)

Dr. V. Forde

(Pre-requisite: Contemporary Christian Morality)

A study of the biblical, historical, and contemporary views of marriage in Roman Catholic theology, with application to modern cultural and psychological dimensions of human relationships.

Three credit hours.

THEOLOGY 172.

Theology and Racism (Seminar)

Rev. A. Smith

A general inquiry into the relationship of Christian thought to the racial crisis. Particular problems such as violence and black power will be analyzed from perspectives of biblical and historical theology.

Three credit hours.

THEOLOGY 173.

Religious Ethics and Law (Seminar)

Fr. J. Bresnahan

An exploration of the relationship between ethics (primarily as influenced by religious faith) and law: an initial investigation of the possible kinds of theoretical relationship between ethics and law will be followed by individual or team research projects in particular legal issues and the ways in which these intersect with problems of social ethics, e.g. legal control of violence, of environmental pollution, of international conflict, of bureaucratic power, of professional standards, etc.

Three credit hours.

THEOLOGY 174.

Theology of Violence and Non-Violence (Seminar)

Rev. A. Smith

An exploration into the scriptural and moral arguments for, and the tradition of, Christian pacifism and non-violent life style. Include also are a study of the "just war" theory, conscientious objection, civil disobedience, and case histories of "witnesses" to non-violence: Gandhi, Martin Luther King, the Berrigans.

Three credit hours.

CONTEMPORARY THEOLOGY

THEOLOGY 211.

Religion in Twentieth-Century America

Dr. C. McNearney

The focus of attention for this course is upon the institutional, moral and intellectual reconstruction of religion which has taken place in 20th century America. Of primary interest is the question of the relationship between American Culture and religion in America i.e., not only the experience of religion(s) in America, but also America as a religious experience. The course combines both lectures and class discussions and utilizes reading material from the disciplines of history, sociology, theology, political science, drama and literature.

Three credit hours.

THEOLOGY 212.

Contemporary Religious Thought

Fr. E. McCarthy

An analysis and appraisal of the writings of the more prominent contributors to modern religious thought.

Three credit hours.

THEOLOGY 213.

Theology and Imaginative Literature

Dr. P. Roberts

An introductory course in religion and literature dealing with the religious aspect or dimension of great literary texts from Aeschylus to Updike. The texts are chosen to illustrate the three great stories in our tradition: the Greek story, the Christian story, and the Modern story.

Three credit hours.

THEOLOGY 214.

Human Living in Teilhard de Chardin

Fr. J. Donnelly

An in-depth study of Teilhard's *The Future of Man* and the *Divine Milieu*.

Three credit hours.

THEOLOGY 215.

Religion in Poetry: Gerard Manley Hopkins

Fr. W. V. E. Casey

An analysis of the poetry of Hopkins in the light of his religious and theological background.

Three credit hours.

(Not offered 1971-72)

THEOLOGY 231.

Religion and Literature (Freshman Honors Seminar)

Dr. P. Roberts

An introduction to religion and literature for Freshmen Honors students. Literary texts ranging from Aeschylus to Updike are discussed in terms of their religious meaning and power.

Three credit hours.

THEOLOGY 232.

Great Essays in Christian Criticism (Seminar)

Dr. P. Roberts

Where is the locus of religious meaning in literature? What is the relation between poetry and belief? Is a Christian tragedy possible? These and many more issues will be studied in relation to certain great essays in Christian Literary Criticism.

Three credit hours.

THEOLOGY 233.

Christ in the Thought of Teilhard de Chardin (Seminar)

Fr. J. Donnelly

Christo-centricity in Teilhard's vision of reality. Sources in Sts. John and Paul. The Incarnation as new Humanity-coming-to-be. Genesis and future of man—ultra human. Humanized-divine or divinized-human energy as "Amor".

Three credit hours.

THEOLOGY 234.

Authority in the Christian Community (Seminar)

Fr. T. H. Sanks

A consideration of the crisis in authority in the church in terms of the paradigm analysis of T. S. Kuhn and from the point of view of the sociology of knowledge. What have been the underlying presuppositions of the nature and function of authority in the community and what are the current alternatives? Readings in Kuhn, Berger and Luckmann, Küng, Baum and Rahner.

Three credit hours.

THEOLOGY 235.

Christianity and Tragedy (Seminar)

Dr. P. Roberts

A study of the points of contact and conflict between the tragic vision and the Christian faith. The question as to whether there can be such a thing as a Christian tragedy will be examined from both a religious and a literary point of view.

Three credit hours.

THEOLOGY 236.

The Extra Mural Church (Seminar)

Fr. C. Delaney

Going beyond, but not abandoning *ecclesiastical* ecumenism (encounter of Christian with Christian), and its extension, *religious* ecumenism (encounter of Christian with Non-Christian), to its concerns the Modern Church adds secular ecumenism (which involves problems common to believer and unbeliever plus social theology). In this latter area, the course will focus on social and cultural problems, e.g. poverty, use of leisure, ecology, race, alcohol and drugs, Church-State, Education, World Peace, New Morality, Theology of Women, etc.

Three credit hours.

(Not offered 1971-72)

Institutes

The College is conscious of the need to contribute of its intellectual resources and the skills of its personnel to the community in which it lives. Matching its educational ideal of civic responsibility, as a civic enterprise it offers summer institutes for secondary school teachers in mathematics, science, and optics/electronics. During the school year it offers in-service institutes in mathematics, physical science and biology for secondary school teachers.

The Institute of Industrial Relations, conducted during the evening hours, and for which no academic credit is given, aims at the intellectual and moral enrichment of the life of participants from management and labor unions. Stress is placed on knowledge of economic conditions in industry, current labor problems, and labor law.

The College offers non-credit summer programs for college and high school student's in Basic College Skills, the Fundamentals of English, and Public Speaking. In conjunction with the Fenwick Theatre staff and company, it offer a non-credit summer institute in Theatre Arts.

SUMMER INSTITUTES IN MATHEMATICS, SCIENCE AND OPTICS/ELECTRONICS

The following programs for teachers of junior and senior high school mathematics and science were offered by the College of the Holy Cross with the support of the National Science Foundation.

Mathematics Institute

Prof. Daniel G. Dewey, M.A., *Director*

Staff of the Institute

Prof. Daniel G. Dewey, M.A.
Prof. John R. McCarthy, M.A.
Prof. Patrick Shanahan, Ph.D.
Prof. Leonard C. Sulski, Ph.D.

Group I:

Prerequisite: At least one year of college mathematics.

MATH S 11.

Introduction to Algebraic Concepts.

The purpose of this course is to provide a background in those topics which are essential for the study of mathematics beyond secondary school and to show how

these topics are related to the traditional content of secondary school mathematics. Topics to be covered include the basic algebra of sets, functions and the algebra of functions, and basic algebra systems. *Three credit hours.*

MATH S 12.

Introduction to Analysis.

The purpose of this course is to provide teachers with an up-to-date introduction to the calculus. This course is taught in conjunction with Math S 11 and includes the study of real functions, neighborhood topology of the line, continuous functions, the derivative functions, the definite integral and the fundamental theorem of the calculus. *Three credit hours.*

Discussion Period.

Each member of the Institute will be expected to take part in a discussion period which will cover problems of curricular reform, new mathematical materials, and supplementary topics in secondary mathematics.

Group II:

Prerequisite: Background equivalent to Group I courses.

MATH S 16.

Introduction to Probability.

The purpose of this course is to provide teachers with a background for the teaching of probability and statistical inference. Topics to be covered include sample spaces, probability and measure, the Bernoulli distribution, the normal curve, Markov chains and linear programming. *Three credit hours.*

MATH S 17.

Introduction to Linear Algebra.

The purpose of this course is to provide teachers with a background for the teaching of algebra, geometry and matrix algebra. Topics to be covered include groups, fields, linear transformations, systems of linear equations and the algebra of matrices. Geometric motivation will be emphasized. *Three credit hours.*

Science Institute

Prof. Robert B. MacDonnell, S.J., Director

Staff of the Institute

Biology:

Prof. Joseph H. McSweeney, Ph.D.

Sister Mary Ann Walsh, A.S.C., M.S.

Chemistry:

Prof. William Andruchow, Jr., Ph.D.

Sister M. Cabrini, C.S.J., M.S.

Mr. Raymond S. Martin, M.S.

Physics:

Prof. George M. Matous, Ph.D.

Mr. James T. Garrity, M.S.

(Associated with each course will be a three-hour laboratory period four afternoons a week.)

BIOLOGY:

S 15.

Cellular Biology and Genetics.

The aim of this course is to provide recent knowledge of the organizational and operational aspects of living matter from the fields of biochemistry, cytology, and physiology. The themes and topics of the course will in large measure be based on the YELLOW version of the BSCS "High School Biology."

Six credit hours.

CHEMISTRY:

S 15.

Modern Concepts in Chemistry.

The topics covered will include (a) the structure of the atom, types of valence, geometry of molecules, and the periodic table; (b) electrochemical and electrolytic cells; (c) introductory notions concerning the energy involved in a chemical reaction. Approximately ten lectures will be devoted to each set of topics and the approach will be strongly "CBA"-orientated. The laboratory will also be "CBA"-orientated.

Selection will be limited to participants who give convincing evidence of a serious interest in the "Chemical Bond Approach" chemistry course.

Six credit hours.

PHYSICS:

S 15.

Fundamental Concepts in Physics.

The topics and manner of treatment will be designed to provide background material for the teaching of high school Physics according to the plan of the Physical Science Study Committee. It will consist of a review of the more difficult topics of Mechanics, Electricity, and Modern Physics.

Six credit hours.

Optics/Electronics Institute

Prof. Roy C. Gunter, Jr., Ph.D., *Director*

Prof. Francis W. Kasetta, Ph.D., *Associate Director*

Staff of the Institute

Prof. Roy C. Gunter, Jr., Ph.D.

Prof. Francis W. Kasetta, Ph.D.

Mr. Robert F. Kelley, M.N.S.
Mr. Alfred E. Wandrei, M.N.S.
Mr. Rudolph E. Petrucci, M.Ed.
Mr. George A. Dahlquist, M.N.S.

ELECTRONICS:

S 16.

Electronics.

This course places primary emphasis on understanding of the physical principles of electronics; attention is also paid to the application of these principles to electronic devices, and their use in physics, biology, chemistry, etc.

Review of principles of AC and DC circuits. Atomic structure of matter and movement of charged particles through solids (including semiconductors), gases and vacua; electron emission; photoelectric effect. Power supplies, amplifiers, cathode ray oscilloscopes, vacuum tube voltmeters, oscillators, etc. Integration of lecture and laboratory material into a high school program. Assembly of vacuum tube voltmeter kit, and analysis of operation. *Six credit hours.*

OPTICS:

S 17.

Optics.

A basic physics course in optics: geometrical (lenses, mirrors, prisms), physical (wave theory, interference, diffraction), and quantum (photons, photoelectric effect, electro-optics, and kolography) aspects. Emphasis on modern applications in microwave optics, lasers, Doppler shift of radio frequency emission from satellites. Theoretical basis for understanding modern optics, combined with experimental experience valuable for the high school program. *Six credit hours.*

In-Service Biology Institute

Rev. John W. Flavin, S.J., *Director*

Staff of the Institute

Rev. John W. Flavin, S.J., Ph.D.
Prof. William A. Campbell, M.S.
Prof. William R. Healy, Ph.D.

EXPERIMENTAL BIOLOGY (Part II).

Developmental and Ecological Biology.

This course is the second of three courses designed to familiarize teachers with the BSCS Laboratory Blocks and to provide participants with background material for the Blocks. In the first semester some of the basic principles of growth and development will be discussed. Special emphasis will be given to frog, chick, hydra and plant development. In the second semester the basic principles of Field

Ecology will be presented. Topics will include: Environmental Factors, Mapping, Succession, Formulae for Communities, and Climate and Physiological Ecology.

Laboratory exercises from the BSCS Laboratory Blocks entitled: Animal Growth and Development, Plant Growth and Development, and Field Ecology will be presented. *Six credit hours.*

In-Service Mathematics Institute

Prof. Peter Perkins, *Director*

Staff of the Institute

Prof. Peter Perkins, Ph.D.

Prof. Daniel G. Dewey, M.A.

MATHEMATICS IS 43, 44

Vector Spaces and Related Algebraic Systems.

During the first semester the axiomatic approach in mathematics, especially in abstract algebra, will be discussed. Groups, rings, fields and related systems will be investigated.

The second semester will combine the notions of group and field to yield the abstract concept of a vector space. However, emphasis shall be placed on the relation of vector space ideas to topics in the secondary curriculum such as matrix algebra, linear equations and geometric vectors. *Six credit hours.*

In-Service Science Institute

Rev. Robert B. MacDonnell, S.J., *Director*

Staff of the Institute

Rev. Robert B. MacDonnell, S.J., M.A., M.S.

Prof. Paul D. McMaster, Ph.D.

FUNDAMENTAL CHEMISTRY.

This course is designed to acquaint the participants with the principles of elementary physical chemistry and the chemical nature of the elements and their compounds.

A brief description of the electrical nature of chemical systems will be given, followed by a discussion of the quantitative and qualitative aspects of chemical reactions. A qualitative introduction into modern theories of atomic and molecular structure will be covered. The energy change accompanying chemical reactions, will be discussed as well as the concepts of equilibrium and the theory of acids and bases. Basic concepts of Organic Chemistry will be treated.

Laboratory experiments will be designed to illustrate the basic principles learned in class and to offer experience in basic chemical laboratory methods. *Four credit hours.*



Scholarships

General

The financial aid program at Holy Cross has been established to assist students who would otherwise not be able to attend the College due to financial restrictions. In addition to the endowed scholarships and restricted awards listed below, the College sets aside substantial funds from its annual operating income to assist worthy candidates in meeting their educational expenses.

Endowed Scholarships

THE GOVERNOR AMES SCHOLARSHIP

Established in 1887 by Governor Oliver Ames. (Income on \$1,000.00)

ANONYMOUS

Established in December, 1965, by an anonymous donor. Income to be used for scholarships to be awarded at the discretion of the president of the College. Preference to students of any creed from the Diocese of Springfield, Massachusetts. (Income on \$69,000.00)

THE EUGENE A. BICKFORD SCHOLARSHIP

Established in October, 1932, from the estate of Mrs. Mary A. Magenis of Brookline, Mass., in memory of her brother, the late Eugene A. Bickford, '96. The annual income to provide for the education of a deserving student under such conditions and regulations as imposed by the faculty of the College. (Income on \$5,000.00)

THE REV. CHARLES E. BURKE SCHOLARSHIP

Established in 1895. Appointment to be made from residents of St. Francis Parish, North Adams, Mass. (Income on \$3,000.00)

THE JAMES M. BURKE SCHOLARSHIP

Established on April 1, 1950, from the Estate of William H. Burke. The beneficiary is to be selected by the Trustees of the College. (Income on \$11,662.69)

CAPTAIN JOHN J. BURKE SCHOLARSHIP FUND

Founded and augmented by gifts in memory of Captain John J. Burke, U.S.M.C., '65. Income to be awarded to a student in the N.R.O.T.C. Program. (Income on \$1842.00)

THE DR. AND MRS. HARRY P. CAHILL SCHOLARSHIP

Established in June, 1963, from a Trust Fund established by Dr. Harry P. Cahill and the Estate of his wife, Anne R. Cahill. Income to be used to aid students who lack sufficient financial means for their education. Selection is to be made by college authorities. (Income on \$55,543.48)

THE ROBERT J. CAIRNS MEMORIAL FUND

Established on September 24, 1953, by bequest from the estate of Alfred F. Finneran, for scholarship aid to worthy students. (Income on \$5,000.00)

THE THOMAS CALLAGHAN SCHOLARSHIP

Established in 1914 by the late Thomas Callaghan of Leicester, Mass., limited to residents of Worcester County "preference to be given to those preparing for the priesthood." (Income on \$2,000.00)

THE HONORABLE JAMES BERNARD CARROLL SCHOLARSHIP

Established in 1939 by Mrs. James Bernard Carroll as a memorial of her husband, the late Justice James Bernard Carroll of the class of 1878. Restricted to graduates of St. Michael's Cathedral High School, Springfield, Massachusetts. Selection to be made by the President of Holy Cross College and the Reverend Rector of St. Michael's Cathedral, Springfield, on candidate's character, scholarship and extracurricular achievements.

JOHN P. CHIOTA, JR. SCHOLARSHIP FUND

Established by his wife and family in memory of John P. Chiota, Jr., '31. Income to be awarded to worthy and needy students with preference given to graduates of Fairfield Preparatory School. (Income on \$2740.00)

THE FRANK D. COMERFORD MEMORIAL FUND

Established by Archibald R. Graustein in 1959. (Income on \$17,500.00)

CLASS OF 1963

Pledges of members of the class of 1963 to Development Fund to be used to establish a scholarship. Payments to June 30, 1969. (Income on \$20,167.80)

CLASS OF 1964 SCHOLARSHIP

Pledges of members of the class of 1964 to Development Fund used to establish a scholarship. Payments to June 30, 1969. (Income on \$16,406.32)

THE CONNECTICUT VALLEY ALUMNI SCHOLARSHIP

Established in 1912 by the Alumni of Connecticut Valley. (Income on \$1,725.00)

THE MAURICE CONNOR MEMORIAL SCHOLARSHIP

Established in 1929 by Mr. John T. Connor in memory of his brother, Maurice. The intention of the donor is to provide, for one boy, board, room, tuition and fee charges, as far as the income will provide them. The single beneficiary is to be chosen by the pastor of St. Mary's Church, Westfield, Mass. (Income on \$15,000.00)

THE MONSIGNOR GEORGE S. L. CONNOR SCHOLARSHIP

Established on October 18, 1955, by gift of the late Msgr. George S. L. Connor, '07. Selection to be made by the president of the College who shall give first preference to a worthy applicant who is a member of Holy Name Parish in Springfield, Massachusetts. If no such eligible candidate applies, then such a candidate who graduates from Cathedral High School shall be considered; if none such, then any applicant from the Springfield high schools. Candidates must pass a scholarship test and give evidence of good character and leadership qualities.

THE THOMAS COSTELLO AND ANNA COSTELLO SCHOLARSHIP

Established on December 9, 1947, by bequest of Susan A. Costello in memory of her parents, and by a bequest from the estate of Fanny Goodwin Hobbs. Income to be used to aid a student who lacks sufficient financial means for his education and who has expressed the intention of entering the priesthood. (Income on \$10,000)

THE CROWLEY FAMILY MEMORIAL SCHOLARSHIP I.

Established on July 2, 1947, by bequest of Miss Bridget T. Crowley of Springfield, Mass. Beneficiary to be selected by competitive examination and is open to students of the parochial and public high schools of Springfield, Mass., who are morally, mentally and physically worthy and competent and who show promise of ability, but who have such limited financial means that, if not aided by a scholarship, they would be unable to attend college. (Income on \$13,033.00)

THE CROWLEY FAMILY MEMORIAL SCHOLARSHIP II.

Established on July 2, 1947, by bequest of Miss Bridget T. Crowley of Springfield, Mass. Conditions same as the Crowley Family Memorial Scholarship I. (Income on \$14,642.14)

THE CROWLEY FAMILY MEMORIAL SCHOLARSHIP III.

Established in 1947 by bequest of Miss Bridget T. Crowley of Springfield, Mass. Conditions same as the Crowley Family Memorial Scholarship I. (Income on \$14,122.99)

THE CRUSADER COUNCIL KNIGHTS OF COLUMBUS SCHOLARSHIP

Established in June, 1963 by a gift of \$5,000.00 toward the establishment of a \$15,000.00 scholarship in honor of Rev. Joseph F. Busam, S.J., and in gratitude for his many years of service as Chaplain of the Crusader Council. Income to be used with preference to be given to premedical or pre dental students. (Income on \$15,000.00)

THE RIGHT REV. MONSIGNOR DANIEL F. CURTIN SCHOLARSHIP

Established in 1921 by the Rt. Rev. Monsignor Daniel F. Curtin, Glens Falls, N.Y., to be appointed by the pastor of St. Mary's Church, Glens Falls, N.Y. (Income on \$10,000.00)

DR. AND MRS. CARL J. DE PRIZIO SCHOLARSHIP

Established on October 30, 1959, by gift of 300 shares of Boston Fund, Inc. Income to be used for award to deserving student in sciences.

THE DANIEL T. DEVINE SCHOLARSHIP

Established in October, 1945, from the estate of Mary F. Devine in memory of her brother, Rev. Daniel T. Devine. To be awarded as a result of competitive examination to the member of the graduating class of St. Mary's Parochial School, Milford, Mass., who has attended said high school for four years and who has been a member of St. Mary's Parish throughout his high school course. (Income on \$15,000.00)

DANIEL F. DOHERTY SCHOLARSHIP FUND

Established in 1969 by a bequest from the late Alice Dillon Doherty, in memory of her husband Daniel F. Doherty (LL.D. '26). Income to be used for aiding needy students, who are residents of Westfield, Mass. (Income on \$10,000.00)

THE JAMES F. DONNELLY, '99 SCHOLARSHIP

Established on May 11, 1956, by gift from Sylvan Oestreicher Foundation. (Income on \$15,000.00)

THE EASTMAN KODAK COMPANY SCHOLARSHIP

Established on September 16, 1960. (Income on \$7,200.00)

THE THEODORE T. AND MARY G. ELLIS SCHOLARSHIP FUND

Established in 1941 by the estate and through the generosity of the late Theodore T. and Mary G. Ellis. From the income of this fund, several scholarship awards of full or partial tuition are annually granted to residents of the City of Worcester. (Income on \$283,834.49)

THE REV. PATRICK J. FINNEGAN, P.R. SCHOLARSHIP

Established on November 28, 1955, by bequest from the estate of Rev. Patrick J. Finnegan. Income to be used to assist needy boys from Portsmouth, N. H. (Income on \$5,032.60)

GENERAL MOTORS COLLEGE PLAN SCHOLARSHIP

A four year scholarship offered semi-annually by General Motors Corporation. The amount of the award varies with the financial need of the recipient as determined by the General Motors Scholarship Committee.

THE "IN MEMORY OF DAVID GOGGIN" SCHOLARSHIP

Established in 1925 by Mrs. Catherine M. Goggin, in memory of David Goggin. Preference to be given a relative. (Income on \$1,000.00)

THE THOMAS F. GROGAN SCHOLARSHIP

A memorial of the deceased father of Dr. Richard H. Grogan, '35, and his brother, Fr. Thomas Grogan, S.J. (Income on \$4,100.00)

THE MONSIGNOR GRIFFIN SCHOLARSHIP

Established in 1895, limited to residents of St. John's Parish, Worcester, Mass. (Income on \$1,000.00)

THE MARY AGNES HABERLIN FOUNDATION

For worthy students chosen by the President or Faculty of the College. (Income on \$249,111.14)

THE JOSEPH T. HACKETT MEMORIAL SCHOLARSHIP

Established by a bequest from the estate of Malachi C. Hackett. Income to be awarded to worthy and needy students with preference given to residents of Meriden, Conn. (Income on \$50,000.00)

THE JOHN H. HALLORAN SCHOLARSHIP I.

Established in 1909 by Mr. John H. Halloran of New York, as a memorial to his brother, the late William J. Halloran, of Worcester, competition open to the country. (Income on \$12,000.00)

THE JOHN H. HALLORAN SCHOLARSHIP II.

Established in 1921 by Mr. John H. Halloran of New York, as a memorial to his brother, the late William J. Halloran, of Worcester. Selection to be made from students of the public and parochial schools of Northampton, Mass., by means of competitive examinations. (Income on \$12,000.00)

THE REV. THOMAS STEPHEN HANRAHAN SCHOLARSHIP

Established in January, 1963, by a bequest from the Estate of Margaret Ellen Kearney as a memorial to the Rev. Thomas Stephen Hanrahan. Income to be used to aid a worthy student. (Income on \$5,000.00)

THE REV. JEREMIAH J. HEALY SCHOLARSHIP I.

Established in 1912 by the Rev. Jeremiah J. Healy, of Gloucester, Mass., for a candidate for the priesthood worthy of financial aid. (Income on \$1,500.00)

THE REV. JEREMIAH J. HEALY SCHOLARSHIP II.

Same as the "Rev. Jeremiah J. Healy Scholarship I." (Income on \$1,500.00)

THE RICHARD HEALY SCHOLARSHIP

Established in 1908 by Mr. Richard Healy of Worcester, open to competition for residents of Worcester County regardless of creed. (Income on \$8,000.00)

THE MR. AND MRS. RICHARD HEALY SCHOLARSHIP

Established in 1916 by Mr. and Mrs. Richard Healy of Worcester, for benefit of a direct relative of donors. (Income on \$43,872.84)

THE REV. FREDERICK W. HEANEY, S.J., SCHOLARSHIP

Established in 1920 by Miss Lillian Heaney, in memory of her deceased brother, the Rev. Frederick W. Heaney, S.J. (Income on \$2,500.00)

THE FRANCIS AND JACOB HIATT SCHOLARSHIP

Established for deserving students, with preference to those from Worcester County; selection to be made by the President of the College. (Income on \$4,300.00)

THE JOHN W. HODGE SCHOLARSHIP

Established in 1946 by a bequest from the late John W. Hodge to aid some worthy Catholic boy from Cambridge, Mass., the terms and conditions of which are to be fixed and regulated by the college. (Income on \$4,466.20)

THE HENRY HOGAN SCHOLARSHIP

Established by gifts of Mr. Henry M. Hogan '18. Income to be awarded to worthy students selected by the President or Faculty of the College. (Income on \$197,800.00)

THE JOHN T. HOLLAND '17, MEMORIAL SCHOLARSHIP

Established on January 2, 1954, by gift from Matthew M. Berman. To be used for worthy students selected by the President of the College. (Income on \$8,500.00)

THE HOLY CROSS SCHOLARSHIPS

These are a limited number of tuition or other partial awards that are made from the college funds, at the times and to the amounts that the financial position of the college permits.

KATHERINE H. HOY SCHOLARSHIP

Established on December 14, 1959, by bequest of \$5,000.00 from the Estate of James M. Hoy, '05. Income to be used to assist a student with preference given to a needy and deserving boy of St. Stephen's Catholic Parish of Worcester.

THE JOHN COLLINS HURLEY SCHOLARSHIP

Established on April 28, 1953, by bequest from the estate of Margaret M. Hurley. Income to be used for education of worthy graduate of Durfee High School, Fall River, Mass. (Income on \$5,026.67)

THE WARREN JOSEPH HURLEY SCHOLARSHIP

Established in 1929 by Mrs. Jeremiah J. Hurley in memory of Warren Joseph Hurley, '29, for the benefit of one or more worthy students aspiring to the priesthood. Selection to be made by the President of the College. (Income on \$5,000.00)

THE "IN MEMORIAM" SCHOLARSHIP

Established in 1915 by an alumnus of the college for a deserving student. (Income on \$8,000.00)

THE REV. CHARLES L. KIMBALL, S.J. SCHOLARSHIP

Established in June, 1961, by a bequest from the Estate of Rev. Arthur B. Kimball. Income to be used to aid a worthy student selected by the Faculty. (Income on \$6,551.40)

THE OTTO SEIDENBURG KING SCHOLARSHIP

Established in October, 1954, by gifts from Atty. John King, '25. Income to be used for a deserving student from a Jesuit high school in the New York City area selected by the President of the College. (Income on \$12,325.00)

THOMAS F. AND ELLEN A. KING SCHOLARSHIP

Established in 1969 by a bequest from the estate of Leo A. King, '12. The income to be used toward the tuition of worthy students selected by the College. (Income on \$10,000.00)

THE REV. MICHAEL H. KITTREDGE SCHOLARSHIP

Established in 1917 by Rev. Michael H. Kittredge, '75. (Income on \$5,000.00)

THE MASSACHUSETTS STATE COUNCIL OF KNIGHTS OF COLUMBUS SCHOLARSHIP FUND

Established in 1937 by the Massachusetts State Council Knights of Columbus; open to members and sons of members of the Knights of Columbus residing and having their membership in the Order in Massachusetts. Award to be made by competitive scholastic examinations under the administration of the College of the Holy Cross.

THE PATRICK W. LALLY MEMORIAL SCHOLARSHIP

Established in March, 1954, from the estate of James Lally to be awarded to a worthy graduate of St. Mary's High School, Milford, Mass., who will be selected by the President of the College of the Holy Cross. (Income on \$5,221.60)

THE MICHAEL J. LAWLOR SCHOLARSHIP

Established in February, 1949, by bequest from the late Retta M. Lawlor. Income to be used to aid a bright and needy student, resident in Waterbury, Conn., who in the opinion of college authorities, shall be deserving of financial assistance. (Income on \$5,000.00)

W. H. LEE MILK COMPANY ENDOWMENT FUND

Established on September 4, 1959, with a gift of 50 shares of Eastman Kodak with the provision that the income from these shares be added to the principal until September 1, 1973. After September 1, 1973, the income to be used for scholarship aid in accordance with specifications as set down in the agreements.

THE JOHN J. LEONARD SCHOLARSHIP OF THE M.C.O.F.

Founded in 1926 and restricted to members, or sons of members, of the M.C.O.F., selection to be made by competitive examinations. (Income on \$6,000.00)

THE REV. JOHN G. MAHONEY, S.J., A FORMER PROFESSOR AT THE COLLEGE, AND JAMES E. MAHONEY, '10 MEMORIAL SCHOLARSHIP

Established in 1946 by Mrs. Edward C. Donnelly in memory of her brothers; to be awarded to a deserving student studying for the degree of Bachelor of Arts in the Classical Course who is to be selected by the President of this College. (Income on \$20,000.00)

THE HENRY VINCENT McCABE SCHOLARSHIP

Established in 1916 by the late Mary McCabe of Providence, R.I., for a deserving student. (Income on \$5,000.00)

THE REV. DENNIS F. McCAFFREY SCHOLARSHIP

Established on September 29, 1953, by bequest from the estate of Rose A. McCaffrey. (Income on \$700.00)

THE EUGENE AND MARGARET MCCARTHY SCHOLARSHIP

Established in July, 1962, by a bequest from the Estate of Margaret McCarthy. Income to be used to aid a worthy student with preference to be given to a resident of Springfield, Mass. (Income on \$24,702.63)

THE PETER MCCORD SCHOLARSHIP

Established by Mary Lambert McCord for a deserving student.

THE REVEREND JOHN F. McDONNELL SCHOLARSHIP FUND

Established in June, 1967, in memory of Reverend John F. McDonnell, '00. Income to be used for the education of deserving and needy students. Selection to be made by President of the College. (Income on \$10,000.00)

THE REV. DAVID F. McGRATH SCHOLARSHIP I.

Established in 1907 by the Rev. David F. McGrath, '70, beneficiary to be selected by competitive examinations. Restricted to graduates of St. Mary's Parish School, Milford, Mass., if there be more than one eligible candidate. If but one such, graduates of Milford Public High School may be admitted to competition; if but one candidate from both schools, any one otherwise eligible in the State to be admitted to competition. (Income on \$6,000.00)

THE REV. DAVID F. McGRATH SCHOLARSHIP II.

Established in 1920 by the Rev. David F. McGrath, '70; conditions same as the "Rev. David F. McGrath Scholarship I." (Income on \$6,000.00)

THE REV. DAVID F. McGRATH SCHOLARSHIP II.

Established in 1920 by the Rev. David F. McGrath, '70; conditions same as the "Rev. David F. McGrath Scholarship I." (Income on \$8,000.00)

THE FRANK J. McHUGH AND KATHLEEN B. McHUGH SCHOLARSHIP FUND

Established on June 14, 1968, by bequest from the estate of Frank J. McHugh, Jr. '38 (Income on \$50,000.00)

THE DR. FREDERICK J. McKECHNIE SCHOLARSHIP

Established in December, 1962, by a bequest from the Estate of Mary I. Dunn. (Income on \$6,223.76)

THE MONSIGNOR JOHN W. McMAHON SCHOLARSHIP

Established in 1938 under provisions of the will of Rt. Rev. Msgr. John W. McMahon, '67, to give scholarship aid to a Holy Cross student to be designated by the Reverend Pastor of St. Mary's parish, Charlestown, Boston, Massachusetts, preference being given to students coming from St. Mary's parish. (Income on \$5,000.00)

THE KATHERINE McQUADE SCHOLARSHIP

Established in June, 1967, by a bequest from the Estate of Katherine McQuade. (Income on \$17,668.45)

THE FRANCIS L. MILLER SCHOLARSHIP

Founded and augmented by gifts in honor of the late Francis L. Miller, Bursar of the College from 1931 to 1961. Income to be awarded to worthy and needy students with preference given to fatherless boys. (Income on \$27,416.39)

THE PATRICK J. MURPHY SCHOLARSHIP

Established in 1914 by Mrs. Ellen M. Murphy, as a memorial to her husband, the late Patrick J. Murphy, Worcester, Mass. (Income on \$1,500.00)

THE MONSIGNOR RICHARD NEAGLE SCHOLARSHIP

Established in 1943 by His Excellency the Honorable Alvan T. Fuller, former Governor of the Commonwealth of Massachusetts, in memory of the late Right Reverend Monsignor Richard Neagle of the Class of 1873, to assist boys qualified, in the opinion of the Faculty, but who otherwise

could not afford such an expenditure as would be necessary to enjoy the educational and religious advantages of the College of the Holy Cross. (Income on \$35,000.00)

THE DENIS F. AND LORETTO RADEL O'CONNOR SCHOLARSHIP

Established on May 26, 1955, by Dr. Denis F. O'Connor, '93, to be used for a worthy student to be selected by college authorities. (Income on \$30,000.00)

THE O'DRISCOLL SCHOLARSHIP

Established in 1874, for a student (limited to residents of the City of Worcester), who is a candidate for the priesthood and is selected by the Bishop of Worcester or his delegate. (Income on \$3,000.00)

THE MAY AND SYLVAN OESTREICHER SCHOLARSHIP

Established on December 30, 1957, by gift of Sylvan Oestreicher. (Income on \$37,926.80)

THE MARY C. O'NEIL FUND FOR BRISTOL COUNTY STUDENTS

Established on January 7, 1955, by gifts from Margaret T. O'Neil, to be used to aid a student from Bristol County. (Income on \$19,973.98)

THE REV. DANIEL H. O'NEILL SCHOLARSHIP I.

Established in 1895, limited to residents of St. Peter's Parish, Worcester, Mass. (Income on \$1,000.00)

THE REV. DANIEL H. O'NEILL SCHOLARSHIP II.

Established in 1908, limited to the residents of the City of Worcester. (Income on \$1,500.00)

PENHALL-O'ROURKE SCHOLARSHIP

Established on September 9, 1958, by bequest of \$1,000.00 from the estate of Dr. James J. O'Rourke, '09 to be used for scholarship purposes in aiding a deserving student.

REVEREND LAWRENCE F. O'TOOLE SCHOLARSHIP

Established in May 1966, in memory of Reverend Lawrence F. O'Toole, '13, by his sister, Mrs. Florence Drury. Preference to priesthood aspirants with preference, first, to a member of St. Bernard's Parish, Worcester and, second, to anyone in the Diocese of Worcester. (Income on \$10,000.00)

THE REV. DR. PATRICK B. PHELAN SCHOLARSHIP

Established in 1917 by Rev. Dr. Patrick B. Phelan, '69; open to competition for graduates of the Sacred Heart School, Holyoke, Mass. (Income on \$16,000.00)

REVEREND MICHAEL G. PEIRCE, S.J., SCHOLARSHIP FUND

Established by gifts from Robert H. McCooey, '52. (Income on \$3,000.00)

THE DAVID H. POSNER AND MARY MURPHY POSNER FOUNDATION

Established on July 1, 1957, by bequest from the estate of Mary M. Posner. Income to be used toward tuition of worthy students. (Income on \$14,922.68)

THE MR. AND MRS. ALOYSIUS F. POWER SCHOLARSHIP

Established by a gift from Mr. Aloysius F. Power, '23. Income to be awarded to whom the College authorities judge to be in need of financial assistance and worthy of aid. (Income on \$89,131.26)

THE REV. JOHN J. POWER SCHOLARSHIP

Established in 1907 by the late Rev. John J. Power, D.D., limited to residents of St. Paul's Parish, Worcester, Mass. (Income on \$1,500.00)

THE MARY A. PRENDERGAST SCHOLARSHIP

Established in 1945 under the will of the late Mary A. Prendergast for deserving orphan students. (Income on \$4,948.40)

THE PURPLE PATCHER SCHOLARSHIP

Established in June, 1963, by the staff of the yearbook, *The Purple Patcher*, Class of 1963, and augmented by the staffs of the Classes of 1964, 1965, 1966 and 1967. (Income on \$20,162.63)

THE "QUID RETRIBUAM" SCHOLARSHIP

Established in 1907 by a friend of education in gratitude for divine favors; if not filled by founder, competitive examinations will be held. (Income on \$8,000.00)

THE LILLIAN A. QUINN SCHOLARSHIP FUND

Established in 1968 by a bequest from the late Lillian A. Quinn. Income to be used to provide scholarship aid for worthy and needy students to be selected by the President of the College, preference being given to students from Immaculate Conception Parish, Worcester. (Income on \$28,000.00)

THE PATRICK W. RAFFERTY SCHOLARSHIP

Established in 1920 and open to competition among deserving students of the City of Worcester. (Income on \$2,000.00)

IN MEMORY OF DENNIS M. AND JOSEPHINE R. REARDON SCHOLARSHIP

Established on January 11, 1952, by bequest from the estate of Josephine F. Reardon. Income to be used to aid a worthy student preparing for the holy priesthood. (Income on \$10,575.39)

THE JOHN REID SCHOLARSHIP

Established in 1894, limited to residents of Worcester. (Income on \$1,500.00)

THE CATHERINE F. REILLY SCHOLARSHIP

Established on June 1, 1955, by bequest from the estate of Joseph J. Reilly, '04, in memory of his mother. Income to be used for a worthy student to be selected by college authorities. (Income on \$12,500.00)

THE JAMES H. REILLY SCHOLARSHIP

Established on June 1, 1955 from the estate of Joseph J. Reilly, '04, in memory of his father. Income to be used for a worthy student to be selected by college authorities. (Income on \$12,500.00)

THE REILLY MEMORIAL SCHOLARSHIP

Established in 1922 by the late Joseph J. Reilly, '04. (Income on \$1,000.00)

THE MARY J. ROBINSON SCHOLARSHIP

Established in 1943 by the late Mary J. Robinson in memory of her mother and father and brothers to assist deserving young men of the Roman Catholic faith in obtaining a collegiate education at the College of the Holy Cross. (Income on \$11,297.86)

THE REV. WILLIAM H. ROGERS SCHOLARSHIP

Established in 1918 by Rev. William H. Rogers, '68. (Income on \$10,000.00)

THE DOROTHY H. AND LEWIS ROSENSTIEL SCHOLARSHIPS

Established on November 26, 1968, through a grant from The Dorothy H. and Lewis Rosenstiel Foundation, in memory of Dorothy H. Rosenstiel, to be awarded with preference to members of disadvantaged minorities, primarily Jewish, Black and Puerto Rican. (Income on \$50,000.00)

THE HON. JOHN E. RUSSELL SCHOLARSHIP

Established in 1907 by a Friend of the College. (Income on \$1,500.00)

THE MR. AND MRS. JOHN A. RYAN FAMILY SCHOLARSHIP FUND

Established in 1967, by Miss Mabel C. Ryan. (Income on \$1,700.00)

THE SCHOLLER FOUNDATION SCHOLARSHIP

Established on October 24, 1955. (Income on \$1,000.00)

THE JOHN F. SCOTT FUND

Established by gifts from John F. Scott, '08. Income to be used to aid worthy students from the State of Maine. (Income on \$2,500.00)

TIMOTHY A. SHEA SCHOLARSHIP FUND

Established by bequests totaling \$101,918.16 from the estate of Timothy A. Shea in memory of his parents, Mr. and Mrs. Daniel M. Shea; a brother, Michael F. Shea; and sisters, Katherine and Elizabeth. Income to be used exclusively for non-resident students residing in the City of Worcester and awarded on a competitive basis.

LT. TIMOTHY J. SHORTEN SCHOLARSHIP FUND

Established by his wife Darlene in memory of 1st Lieutenant Timothy J. Shorten, U.S.M.C.R., '64. Income to be awarded to worthy and needy students designated by the College. (Income on \$2,600.00)

THE ELIZABETH SPANG SCHOLARSHIP

Established in 1936 by the will of Elizabeth Spang of West Haven, Connecticut. This income to be used toward the education of a "student of Holy Cross College whom the governing body of said College may deem to be in need of financial assistance for his college work and worthy of said scholarship." (Income on \$5,000.00)

ERNEST P. TASSINARI SCHOLARSHIP

Established by a gift from Ernest P. Tassinari, '48. Income to be awarded to worthy and needy students designated by the College. (Income on \$50,138.85)

IN MEMORY OF HELEN M. AND JOHN F. TINSLEY SCHOLARSHIP

Established on November 20, 1953 by bequest from the estate of John F. Tinsley. Income to be used to assist worthy students selected by the President of the College. (Income on \$71,829.20)

THE R. J. TOOMEY Co. SCHOLARSHIP

Established by gifts from John A. Toomey, '28, Lawrence T. Toomey, '30 and Richard J. Toomey, '23. (Income on \$4,600.00)

THE REV. DAVID W. TWOMEY, S.J. SCHOLARSHIP

Established on October 10, 1955 by gifts from family and friends of Fr. Twomey, S.J. Income to be used to aid a worthy student. (Income on \$21,100.00)

THE REV. ROBERT WALSH SCHOLARSHIP

Established in 1895, limited to residents of the Immaculate Conception Parish, Worcester, Mass. (Income on \$1,000.00)

THE STEPHEN W. WILBY SCHOLARSHIP

Founded by the Naugatuck Valley Alumni Association and friends in Connecticut. (Income on \$7,514.01)

THE JOHN A. WILLO SCHOLARSHIP

Established by a gift from Mrs. John A. Willo in memory of her late husband. Income to be awarded to worthy and needy students selected by the President of the College. (Income on \$20,000.00)

OWEN J. WOOD SCHOLARSHIP FUND

Established in May 1967 in memory of Owen J. Wood, '66, by The Worcester Undergraduate Club. The income is to be used to provide financial aid to a Worcester area student, with preference given to orphans. (Income on \$4,300.00)

WORCESTER FEDERAL SAVINGS AND LOAN ASSOCIATION EDUCATIONAL FUND

Established on April 1, 1960, by gift of \$3,500.00.

Financial Aid Acknowledgements

Many Holy Cross alumni clubs sponsor students of their selection for complete or partial tuition scholarships. Among those who have participated in this program are:

Holy Cross Club of Boston
Holy Cross Alumni Club of Worcester
Holy Cross Club of Rhode Island
Berkshire County Holy Cross Club
Springfield, Massachusetts Alumni Association Club
Holy Cross Club of Maine
Holy Cross Club of New York
Holy Cross Club of Eastern New York
Rochester Alumni Club
Eastern Connecticut Holy Cross Club
Plymouth Alumni Club

Many of these clubs are annual contributors; others contribute at various times.

Grateful acknowledgement is also due to the many corporations, foundations, fraternal organizations, P.T.A.'s, high school associations and similar groups who have aided students of their selection by financial contributions toward tuition costs.

Prizes

THE BELLARMINE HISTORY MEDAL

The Bellarmine Gold Medal, the gift of Mr. and Mrs. Edward J. McGratty, Sr., in memory of Patrick H. and Elizabeth L. McGratty, for the best historical essay on colonial America.

1970: Not awarded

THE BOURGEOIS AWARD

The Bourgeois French Prize, the income on \$1,000, established in 1947 by Albert L. Bourgeois, Esq., '22, in memory of his late father, Pierre Bourgeois, and of his mother, Fabiola Bourgeois, to be awarded annually for the best essay on a subject relating to the French or their descendants in the United States.

1970: Ronald N. Menard, '70

THE NELLIE M. BRANSFIELD PRIZES

The Nellie M. Bransfield Award, founded in 1946, by the will of the late Nellie M. Bransfield, income on \$2,000, to be awarded annually as prizes for excellence in elocution among the undergraduates.

1970: Carl A. Fischer, '72

THE FRANK D. COMERFORD PRIZE

The Frank D. Comerford Silver Medal, founded in 1942 by the management and employees of the Boston Edison Company, to be awarded annually at commencement exercises to a student of the graduating class for excellence in public speaking.

1970: Bernard F. Swain, '70

THE PHILIP A. CONNIFF, S.J. PRIZE

The Philip A. Conniff, S.J. Prize (income on \$1,000.00), established in 1970, to be awarded annually beginning in 1971 to that student attaining the highest mark in the study of any of the Latin Classical authors.

THE CROMPTON SCIENTIFIC MEDAL

The Crompton Gold Medal, founded in August, 1875, by George Crompton, Esq., for the best scientific essay submitted during the school year.

1970: Not awarded

THE JOHN J. CROWLEY PRIZE

The John J. Crowley Purse (income on \$1,000.00) awarded annually to provide purse or prize for best essay on any religious, literary, historical, economic or scientific subject.

1970: Not awarded

THE PATRICK F. CROWLEY MEMORIAL PRIZE

The Patrick F. Crowley Purse, the income on \$1,000.00, founded in July, 1947, by Bridget T. Crowley, in memory of her brother, Patrick F. Crowley, to be awarded annually for proficiency in debating and oratory.

1970: James B. Gwynne, '73

THE DEVALERA HISTORY PURSE

The DeValera Purse (income on \$1,000.00) the gift of Daniel H. Coakley, for the best essay on a subject taken from Irish history.

1970: Not awarded

THE FALLON DEBATING PRIZE

The Fallon Debating Prize, founded in 1901 by Rev. John J. Fallon of the Class of 1880 (income on \$1,000.00).

1970: Philip J. Egan, '71

THE FLAHERTY PRIZE IN HISTORY

The Flaherty Gold Medal, founded in May 1903, by Patrick W. Flaherty, Esq., to be awarded annually for the best essay on a subject selected by the faculty.

1970: Not awarded

THE FLATLEY PHILOSOPHY PRIZE

The Flatley Gold Medal, founded in 1890 by the late Reverend Michael F. Flatley of the Class of 1865, to be awarded annually to a senior for proficiency in philosophy.

1970: Thomas F. Lutynski, '70

THE EDNA DWYER GRZEBIEN PRIZE

The Edna Dwyer Grzebien Prize, established in 1960 by Doctor Thomas W. Grzebien in honor of his wife, former teacher of modern languages at

Classical High School, Providence, R. I., income on \$1,000.00, to be awarded annually to a student proficient in modern languages.

1970: Thomas G. Marullo, '70

THE REVEREND WILLIAM F. HARTIGAN MEDAL

The Reverend William F. Hartigan Medal, founded in May, 1932, by Josephine C. Hartigan in memory of her brother, the Reverend William F. Hartigan, to be awarded annually to a student of the graduating class submitting the best essay on a subject in religion.

1970: Not awarded

THE HOLY CROSS CLUB OF WORCESTER PRIZE

Established in 1966 by the H. C. Club of Worcester. A plaque and cash award to be presented each year to the highest ranking Worcester area senior.

1970: Philip T. O'Leary, '70

THE KAVANAGH AWARD

The Kavanagh Medal, established in 1952 by the late Right Reverend Michael P. Kavanagh of the Class of 1893, to be awarded annually to the student writing the best original essay on some phase of Catholic art or Christian archaeology.

1970: Not awarded

THE KILLEEN PRIZE IN CHEMISTRY

The Edward V. Killeen, Jr., Chemistry Purse, for general excellence throughout the Bachelor of Arts premedical course in chemistry.

1970: Joseph R. Benotti, '70

THE FATHER GEORGE A. KING, S.J., AND RICHARD J. KEENAN MEMORIAL AWARD

Established in January, 1965, by Charles H. Keenan in memory of his son, Richard, of the Class of 1967, and the late Rev. George A. King, S.J., a professor of political science at the College. To be awarded to a member of the graduating class for proficiency in political science.

1970: John E. Muench, '70

THE KRANICH PRIZE

The Kranich Gold Charm, the gift of the Kranich Brothers, Inc., of

Worcester, Massachusetts, to be awarded annually to the student contributing the best essay to "The Purple."

1970: Mark J. Earley, '70

THE JOHN C. LAWLOR MEMORIAL PRIZE

The John C. Lawlor Gold Medal, the gift of the Class of 1911, to perpetuate the memory of Dr. John C. Lawlor of the Class of 1911, to be awarded annually to a letterman of the graduating class adjudged the outstanding student and athlete during the college course.

1970: Frederick DeAngelis, '70

THE WILLIAM E. LEAHY AWARD

The William E. Leahy Award in memory of William E. Leahy of the Class of 1907, to the outstanding debater in the B.J.F. Debating Society. This memorial prize consists of a medal and a cash award of \$100.00.

1970: Patrick J. Gallagher, '71

THE LEONARD PURSE

The Leonard Award, founded in 1951 by the will of the late Reverend John F. Leonard, to be awarded annually for proficiency in oratory, debating or like competition.

1970: Bernard F. Swain, '70

THE MARKHAM MEMORIAL PRIZE

The Markham Memorial Prize consisting of a Gold Medal and a Purse of \$100.00, established in 1947 by the Most Reverend Thomas F. Markham, D.D., of the Class of 1913, in memory of his parents, James and Honora Hickey Markham, to be awarded annually to a junior or a senior designated by the Dean as having the highest rank of academic proficiency in the philosophy course of natural theology.

1970: Brian L. Frechette, '70

THE GERTRUDE MCBRIEN MATHEMATICS PRIZE

The Gertrude McBrien Mathematics Prize, established in 1960, income on \$1,000.00, to be awarded annually to a senior for proficiency in mathematics.

1970: *Ex Aequo*: John M. DeCiccio, '70
Kevin J. Leary, '70
Robert J. Stokes, '70

THE McMAHON HISTORY PURSES

The McMahon Purses, three in all, founded in 1927 by the late Right Reverend Monsignor John W. McMahon of the Class of 1867, to be awarded annually for the best essays on the history of the Catholic Church in New England.

1970: Not awarded

THE GEORGE B. MORAN AWARD

The George B. Moran Award, established in 1965 by the Textile Veterans Association, to a senior who has given evidence of scholarship and leadership in school activities. U.S. Savings Bond and Medal.

1970: Thomas J. Neville, '70

THE NUGENT PHYSICS MEDAL

The Nugent Gold Medal, founded in June, 1894, by the Reverend Edward Evans Seagrave to perpetuate the memory of his ward, John T. Nugent, who died at the College in 1893, awarded annually for general excellence throughout the course in physics.

1970: James R. Fienup, '70

THE O'CONNOR DEBATING PRIZE

The Joseph J. O'Connor Purse, income on \$1,000, the gift of the late Joseph J. O'Connor of the Class of 1909.

1970: David J. Keegan, '73

THE MRS. KATE C. POWER MEDAL

The Mrs. Kate C. Power Medal, founded in 1942 by the will of the late Mrs. Kate C. Power, to be awarded to the highest ranking student in the College of the Holy Cross in the Bachelor of Arts (with Honors) Course in the Sophomore year.

1970: Stephen A. Kamer, '72

THE PURPLE PRIZE

The Purple Purse, the gift of the College, to be awarded annually to the student contributing the best poem to "The Purple."

1970: *Ex Aequo*: Edward J. Osowski, '70
Stephen I. Dwyer, '70

THE REVEREND JOHN F. REDICAN PRIZE

The Reverend John F. Redican Medal, donated by a friend in memory of the Reverend John F. Redican, '78, to be awarded annually to a senior designated by the Department of Theology as having demonstrated proficiency in the study of Theology.

1970: Bernard F. Swain, '70

THE REILLY MEMORIAL PRIZE

The James H. Reilly Memorial Purse, the income on \$600, founded by Joseph J. Reilly of the Class of 1904 and immediate relatives, to be awarded annually to the student contributing the best short story to "The Purple."

1970: Not awarded

THE FREEMAN M. SALTUS PRIZE

In memory of Freeman M. Saltus, awarded for excellence in essays on labor or economics.

1970: Not awarded

THE STRAIN PHILOSOPHY PRIZE

The Strain Gold Medal founded in June, 1877, to be awarded annually for the best essay on a subject selected from the field of philosophy.

1970: Not awarded

THE LIEUTENANT WILLIAM PETER SULLIVAN, JR., MEDAL

The Lieutenant William Peter Sullivan, Jr., Medal, the gift of Mrs. William P. Sullivan, Jr., in memory of her late husband, Lieutenant William Peter Sullivan, Jr., U.S. Naval Reserve, of the Class of 1939, to be awarded annually to the member of the varsity track team who, by vote of his fellow team members, is adjudged to have merited this award.

1970: Arthur L. Dulong, '70

THE VARSITY CLUB NORTON PURSE OR MEDAL

For an athlete in the Bachelor of Arts Curriculum. (Income on \$500.00)

1970: Marc R. Young, '70

Donors To The Library

1970

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American Council on Germany
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R. Gene Brown
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Center for the Study of Democratic Institutions
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The Christophers
W. A. Clark Memorial Library
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Commonwealth of Massachusetts
Conference on Economic Progress
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Ford Foundation
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Haskins & Sells
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Holy Cross College—
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University
International Research Seminar
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ory of)
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Massachusetts Department of Labor
and Industries
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University of Michigan Library
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ter, Inc.
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Dr. Joseph Paciorek

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 by Terry McCarthy, '70
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 brary Fund
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 nomics
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 memory of John J. Scott, '08)
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 Lt. Timothy J. Shorten, '64 (in
 memory of)
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 Rear Adm. James G. Sliney, '31
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 tory
 Smithsonian Institution
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 of)
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 Patrick
 Edward J. Speno
 Stanford University
 The Stanley Foundation
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 Foster Stearns Fund (In memory of
 Rev. C.E. Sloane, S.J.)
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 velopment
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 Welfare
 U. S. Dept. of State, Washington,
 D.C.
 U. S. House of Representatives
 U. S. Joint Congressional Commit-
 tee on Defense Production
 U. S. Marine Corps
 U. S. Military Academy—
 West Point
 U. S. National Archives
 U. S. Navy Dept.
 University of Arizona Library
 University of Nottingham
 University of Texas
 University of Wisconsin
 Albert & Emily Vail
 Francis H. Vogel, '31 (in Remem-
 brance of Sarah E. Vogel)
 Samuel Weinrott Fund
 Wellesley College
 West Virginia University
 Margaret Bourke White
 Dorothy Godfrey Wayman, Litt.D.
 '54
 George White, '39
 Senator Harrison Williams
 Worcester City Council, Worcester,
 Mass.
 Dr. & Mrs. Rudolph L. Zlody

Correspondence Directory

Correspondence should be addressed to all college officials listed below and mailed to College of the Holy Cross, Worcester, Massachusetts 01610.

Academic Records	Registrar
Alumni Placement	Director of Alumni Placement
Admission and Catalogs	Director of Admission
Alumni Affairs	Alumni Executive Secretary
Alumni Fund	Director of Alumni Fund
Archives	Archivist
Athletics	Director of Athletics
Business Affairs	Vice President for Business Affairs
Campus Center	Director of Campus Center
Counseling Center	Director of Counseling Center
Development Program	Vice President of Development and College Relations
Educational Program	Vice President and Dean of the College
Financial Aid	Director of Financial Aid
General College Policy	President
Graduate Studies	Director of Graduate Studies
Library Information	Librarian
News Bureau	Director of News Bureau
Personnel	Director of Personnel
Physical Plant	Business Manager
Public Relations	Director of Public Relations
Purchasing	Director of Purchasing
Special Studies, Honors Programs	Director of Special Studies
Student Activities	Director
Student Housing	Dean of Men
Student Personnel	Dean of Students
Treasurer's Office	Treasurer

TELEPHONE DIRECTORY

AREA CODE 617

Alumni Executive Secretary	793-2525
Business Manager	-2438
Chaplain of the College	-2489
Dean of Men	-2411
Dean of the College	-2541
Dean of Students	-2428
Director of Admission	-2443
Director of Alumni Fund	-2415
Director of Alumni Placement	-2427
Director of Athletics	-2582
Director of Campus Center	-2564
Director of Counseling Center	-3363
Director of Graduate Studies	-2466
Director of News Bureau	-2419
Director of Personnel	-2424
Director of Public Relations	-2410
Director of Purchasing	-2441
Director of Special Studies	-2498
Director of Student Activities	-2564
Infirmary	-2276
Information and Operator	-2222
Librarian	-3371
Office of the President	-2525
Office of Student Activities	-2564
Registrar	-2511
ROTC, Air Force	-3343
ROTC, Naval	-2433
Treasurer	-2514
Vice President for Business Affairs	-2515
Vice President and Dean of College	-2541
Vice President for Development and College Relations	-3472

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Bequests

Gifts by will to Holy Cross are essential to the future of the College. The unrestricted gift is the most useful and effective since it can be allocated where the need is greatest. However, a gift for a specific purpose is also vital and may take the form of endowed chairs, named scholarships, buildings, books for the library, research equipment, works of art, etc.

The following suggested form for a bequest to the College of the Holy Cross should be adapted or rewritten by legal counsel to fit the donor's individual situation.

Legal Form of Bequest

I give, devise and bequeath to the Trustees of the College of the Holy Cross, a corporation existing under the laws of the Commonwealth of Massachusetts, and located in the City of Worcester, Commonwealth of Massachusetts, the sum of —— Dollars (or otherwise describe the gift) for its general corporate purpose (or name a particular corporate purpose).