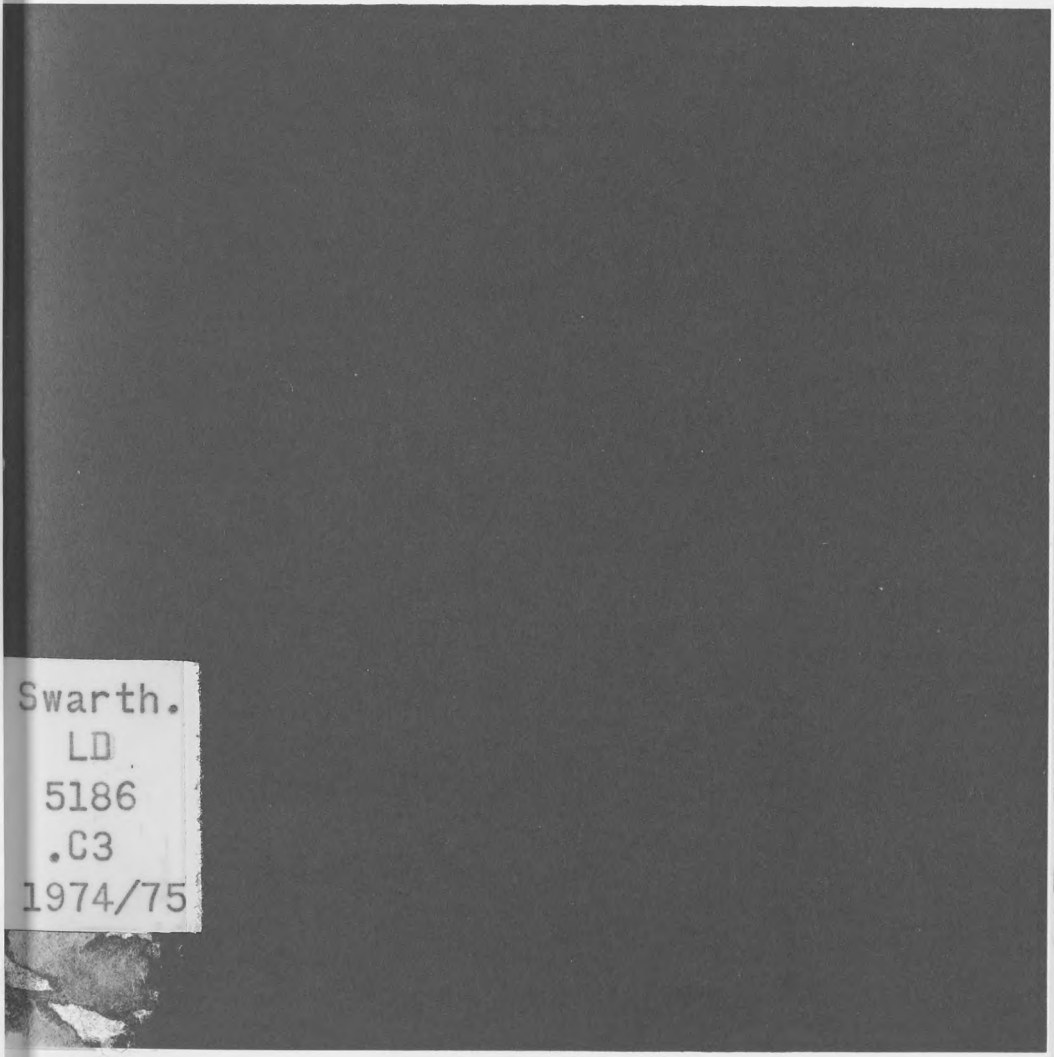
CATALOGUE ISSUE 1974-75

# SWARTHMORE COLLEGE BULLETIN



# SWARTHMORE COLLEGE BULLETIN



CATALOGUE ISSUE ▪ 1974-1975

Volume LXXII ▪ Number 1 ▪ September 1974

## DIRECTIONS FOR CORRESPONDENCE

SWARTHMORE COLLEGE, SWARTHMORE, PA. 19081

| | |
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Photographs by Walter Holt, David Landau, James Purring, and Lawrence S. Williams.

*(Printed in U. S. A.)*

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## 1974 Fall Semester

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|---|---|
| *September 11-14* | Freshman placement days |
| *September 13* | Meeting of Honors students |
| *September 14* | Registration |
| *September 16* | Classes and Seminars begin |
| *October 4-5* | Meeting of the Board of Managers |
| *November 28-30* | Thanksgiving recess |
| *December 6-7* | Annual Meeting of the Board of Managers |
| *December 6* | Registration for spring semester |
| *December 13* | Christmas vacation begins, 6:00 p.m. |

## 1975

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|---|---|
| *January 2* | Christmas vacation ends, 8:30 a.m. |
| *January 2-8* | Reading period (at option of instructor) |
| *January 8* | Classes and Seminars end |
| *January 11* | Midyear examinations begin |
| *January 18* | Midyear examinations end |
| *January 20* | Meeting of Honors students |

## Spring Semester

| | |
|---|---|
| *January 22* | Seminars begin |
| *January 27* | Classes begin |
| *February 28-March 1* | Meeting of the Board of Managers |
| *March 7* | Spring vacation begins, 6:00 p.m. |
| *March 17* | Spring vacation ends, 8:30 a.m. |
| *April 28-May 6* | Reading period (at option of instructor) |
| *May 2* | Seminars end |
| *May 5* | Pre-registration for fall semester |
| *May 6* | Classes end |
| *May 9* | Written Honors examinations begin |
| *May 12* | Course examinations begin |
| *May 19* | Course examinations end |
| *May 20* | Written Honors examinations end |
| *May 20-22* | Senior comprehensive examinations |
| *May 22-24* | Oral Honors examinations |
| *May 30* | Meeting of the Board of Managers |
| *May 31* | Alumni Day |
| *June 1* | Baccalaureate Day |
| *June 2* | Commencement Day |

## DIRECTIONS FOR REACHING SWARTHMORE COLLEGE

The College is readily accessible from points north and south of Philadelphia by train. Penn Central trains from New York and Washington arrive hourly at Philadelphia's 30th Street Station. From 30th Street Station, the Media Suburban Line takes 23 minutes to reach the campus.

Motorists from the north and from the west leave the Pennsylvania Turnpike at Exit 24 (Valley Forge) and from the toll booth travel approximately two miles on I-76 to Exit 36; exit on to Route 320 and follow it south approximately 14.5 miles to College Ave.; turn right on to College Ave. and proceed two blocks to Parrish Hall.

Motorists from the south leave I-95 at Chester, Pa. (PA 320—PA 352—Edgmont Ave. Exit); count mileage from beginning of exit ramp and follow Route 320 north approximately 4.1 miles to College Ave.; turn left on to College Ave. and proceed two blocks to Parrish Hall.

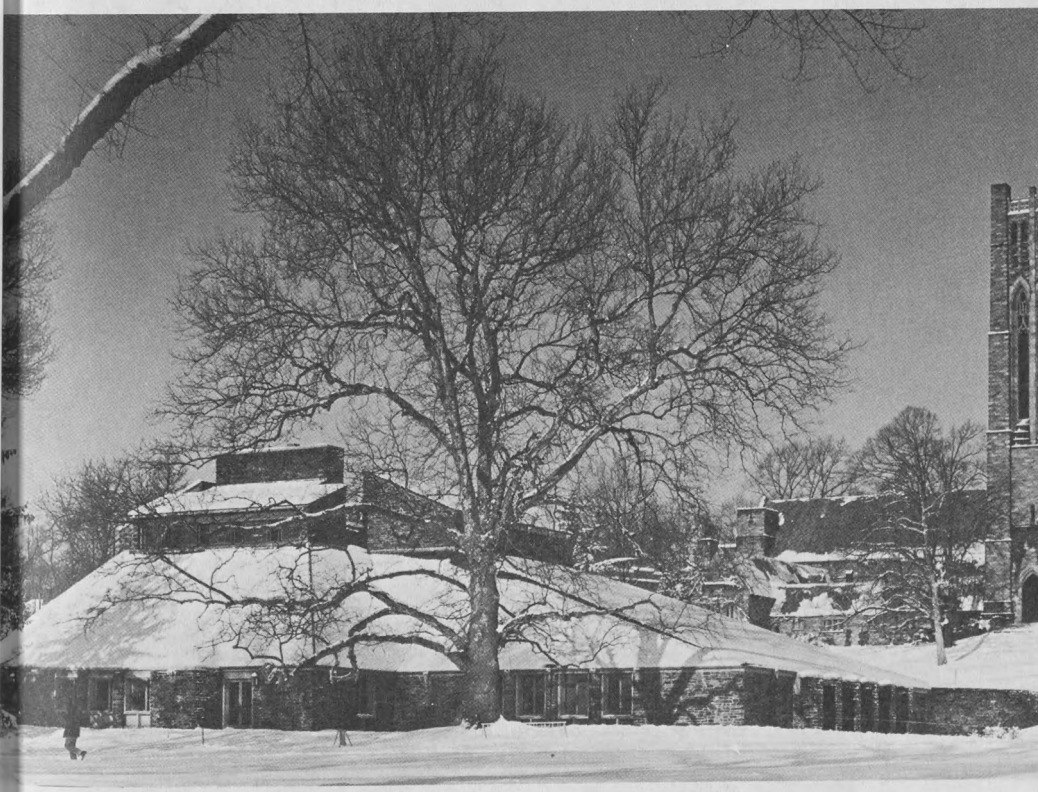
Motorists from central New Jersey should use Walt Whitman Bridge. After crossing the bridge, follow signs for Philadelphia International Airport (Route 291). Pass the airport and continue following Route 291 to Route 420. Turn right on to 420 north approximately 4.1 miles to Baltimore Pike (Strawbridge and Clothier store at intersection). Turn left on to Baltimore Pike and travel approximately .9 mile to Route 320 (fourth stoplight). Turn left on to 320 and follow it .5 mile to College Ave. Turn right on to College Ave. and proceed two blocks to Parrish Hall.

There is no direct public transportation from Philadelphia International Airport to the College. Taxi fare from the Airport to the College is approximately six dollars.

# I

# INTRODUCTION TO SWARTHMORE COLLEGE

# EDUCATIONAL RESOURCES



*Sharples Dining Hall and Clothier Tower*

# INTRODUCTION TO SWARTHMORE COLLEGE

Swarthmore College, founded in 1864 by members of the Religious Society of Friends, is a co-educational college occupying a campus of about 300 acres of rolling wooded land in and adjacent to the borough of Swarthmore in Delaware County, Pennsylvania. It is a small college by deliberate policy. Its present enrollment is about 1200 students, of whom 550 are women and 650 are men. The borough of Swarthmore is a residential suburb within half an hour's commuting distance of Philadelphia. Because of its location, Swarthmore College students are able to combine the advantages of a semi-rural setting with the opportunities offered by Philadelphia. Especially valuable is the cooperation made possible with three other nearby institutions, Bryn Mawr and Haverford Colleges and the University of Pennsylvania.

## OBJECTIVES AND PURPOSES

In accordance with the College's Quaker tradition, Swarthmore students are expected to prepare themselves for full, balanced lives as individuals and as responsible citizens through exacting intellectual study supplemented by a varied program of sports and other extracurricular activities.

The purpose of Swarthmore College is to make its students more valuable human beings and more useful members of society. It shares this purpose with other educational institutions, for American education is a direct outgrowth of our democratic principles. While a common purpose underlies all American education, each school and college and university seeks to realize that purpose in its own way. Each must select those tasks it can do best. Only by such selection can it contribute to the diversity and richness of educational opportunity which is part of the American heritage and the American strength.

## INTRODUCTION

## STANDARDS OF EXCELLENCE

Democracy demands a broad base of intelligent understanding of issues. It also necessitates a high order of excellence in those who are destined to become its leaders. Swarthmore can best serve society by the maintenance of high standards. It is peculiarly fitted by tradition and performance for this essential role, and it is precisely this readiness to do a particular job well that gives the College its value in the educational pattern of American democracy.

Education is largely an individual matter, for no two students are exactly alike. Some need detailed help, while others profit from considerable freedom. The program of Honors study, in which Swarthmore pioneered, is designed to give recognition to this fact. It is the most distinctive feature of the College's educational program. For many students, it provides an enriching and exciting intellectual experience. It has as its main ingredients freedom from ordinary classroom routine, close association with faculty members in small seminars, concentrated work in broad fields of study and maximum latitude for the development of individual responsibility. The Honors program and the Course program are alternative systems of instruction for students during their last two years. Both are designed to evoke the maximum effort and development from each student, the choice of method being determined by individual need and capacity.

## THE RELIGIOUS TRADITION

Swarthmore College was founded by members of the Religious Society of Friends, and it seeks to illuminate the life of its students with the spiritual principles of that Society. Although it has been non-sectarian in control since the beginning of the present century, and although the children of Friends compose a minority of the student body, the College seeks to preserve the religious traditions out of which it sprang.

The essence of Quakerism is the individual's responsibility for seeking truth and for applying whatever truth he believes he has found. As a way of life, it emphasizes hard work, simple living, and generous giving; personal integrity, social justice, and the peaceful settlement of disputes. The College does not seek to impose on its students this Quaker view of life, or any other specific set of convictions about the nature of things and the duty of man. It does, however, have the two-fold aim of encouraging conscious concern about such questions and unceasing re-examination of any view which may be

held regarding them. That is the kind of ethical and religious character which Swarthmore seeks to develop.

## TRADITION AND CHANGE

A college is never static. Its purposes and policies are always changing to meet new demands and new conditions. The founders of Swarthmore would find in it today many features which they never contemplated when they shaped the College in the middle of the nineteenth century. Swarthmore, if it is to remain effective, must be forever changing. The goal is to achieve for each generation, by means appropriate to the times, that unique contribution and that standard of excellence which have been the guiding ideals of Swarthmore from its founding.

# EDUCATIONAL RESOURCES

## PHYSICAL FACILITIES

The primary educational resources of any college are the quality of its faculty and the spirit of the institution. Second to these are the physical facilities, in particular the libraries, laboratories and equipment.

Laboratories, well equipped for undergraduate instruction and in some cases for research, exist in physics, chemistry, zoology, botany, psychology, astronomy, and in civil, mechanical and electrical engineering. The Sproul Observatory, with its 24-inch visual refracting telescope, is the center of much fundamental research in multiple star systems. The Edward Martin Biological Laboratory provides facilities for work in psychology, zoology, botany, and pre-medical studies. The Pierre S. Du Pont Science Building, completed in 1960, provides accommodations for chemistry, mathematics, and physics. Beardsley and Hicks Halls contain the engineering laboratories.

*The Arts Center,* opened in 1961, contains the Paul M. Pearson Experimental Theater, the Florence Wilcox Lobby for art exhibitions, and studios for various arts and crafts.

*The Lang Music Building,* opened in September 1973, contains an auditorium seating approximately 500, the music library, classrooms, practice and rehearsal rooms, and an exhibition area. It is the central facility for the program of the Music Department and for musical activities at the College.

*The Computer Center,* located in Beardsley Hall, is furnished with an IBM 1130 computer with a plotter and appropriate supporting equipment. Students and faculty members also have access to IBM System 370 facilities using telecommunication equipment for remote job entry. Both systems are available to students and faculty members for research and instruction.

*The Center for Social and Policy Studies* in Beardsley Hall, established in 1972 under an initial grant from the National Science Foundation and closely related to the Computer Center, is a facility for the accumulation of data and for student and faculty research projects, which are frequently interdisciplinary and part of the curriculum. It is intended to encourage interaction and a common focus among departments, especially the social and natural sciences, engineering, and mathematics, in empirical work on social and policy issues.

*The Language Laboratory* in Beardsley Hall, made possible by a contribution from the James Foundation of New York, was installed in 1964. It provides stations for 24 students and has the equipment for effective use in language teaching.

*The Bartol Research Foundation* of the Franklin Institute, which is also located on the campus, enjoys an international reputation for its basic research activities in physics, particularly in the fields of nuclear physics, cosmic radiation, solid state physics, and astronomy. Through its affiliation with Thomas Jefferson University, Bartol offers a program of study leading to the Ph.D. degree.

*The Thomas B. and Jeannette E. L. McCabe Library* contains reading rooms, offices and the major portion of the College library collection. Total College library holdings amount to 400,000 volumes. Some 20,000 volumes are added annually. About 2,000 periodicals are received regularly. The general collection, including all but the scientific and technical books and journals, is housed in the library building, situated on the front campus. The Du Pont Science Library houses some 23,500 books and journals in chemistry, engineering, mathematics and physics. The Lang Music Library contains about 9,000 books and scores, 4,000 recordings, and listening equipment. The library is definitely a collection of books and journals for undergraduate use. The demands of Honors work, however, make necessary the provision of large quantities of source material not usually found in collections maintained for undergraduates. It is a point of library policy to try to supply, either by purchase or through inter-library loan, the books needed by students or members of the faculty for their individual research.

## SPECIAL COLLECTIONS

In addition, the library contains certain special collections—the British Americana collection, the Wells Wordsworth and Thomson

collections, the Auden collection, the Bathe collection of technological history, and a collection of the issuances of 650 private presses.

A number of special features enrich the academic background of the college. Among these are the following:

*The Friends Historical Library,* founded in 1871 by Anson Lapham, is one of the outstanding collections in the United States of manuscripts, books, pamphlets, and pictures relating to the history of the Society of Friends. The library is a depository for records of Friends Meetings belonging to Baltimore, Philadelphia, and other Yearly Meetings. More than 3,200 record books have been deposited; many of them have been reproduced on microfilm, for which four reading machines are available. The William Wade Hinshaw Index to Quaker Meeting Records indexes the material of genealogical interest in the records of 307 meetings in various parts of the United States. Notable among the other holdings are the Whittier Collection (first editions and manuscripts of John Greenleaf Whittier, the Quaker poet), the Mott Manuscripts (over 400 autograph letters of Lucretia Mott, antislavery and women's rights leader), and the Hicks Manuscripts (more than 300 letters of Elias Hicks, a famous Quaker minister). The Library's collection of books and pamphlets by and about Friends numbers approximately 30,000 volumes. About 96 Quaker periodicals are currently received. There is also an extensive collection of photographs of meetinghouses and pictures of representative Friends, as well as a number of oil paintings, including two versions of "The Peaceable Kingdom" by Edward Hicks. It is hoped that Friends and others will consider the advantages of giving to this Library any books and family papers which may throw light on the history of the Society of Friends.

*The Swarthmore College Peace Collection* is of special interest to research students and others seeking the records of the peace movement. The personal papers of Jane Addams of Hull House, Chicago, (approximately 10,000 items) formed the original nucleus of the Collection (1930). Over the years other major collections have been added including the papers of Devere Allen, Emily Greene Balch, Julien Cornell, Homer Jack, A. J. Muste, William Sollmann, E. Raymond Wilson, and others, as well as the records of the American Peace Society, Fellowship of Reconciliation, Friends Committee on National Legislation, Lake Mohonk Conferences on International Arbitration, National Interreligious Service Board for Conscientious Objectors, National Council for Prevention of War, National Council

to Repeal the Draft, SANE, War Resisters League, Women's International League for Peace and Freedom, World Conference of Religion for Peace, World Peace Foundation, and many others. The Peace Collection serves as the official repository for the archives of many of these organizations. The Collection includes a library of 5,500 volumes and files of 1,200 peace periodicals published in the United States and abroad over the past 150 years; approximately 185 such periodicals in eleven languages are currently received from twenty-one countries. A more nearly complete description of the Collection will be found in the *Guide to the Swarthmore College Peace Collection,* published by the College and available on loan.

*The Bronson M. Cutting Memorial Collection of Recorded Music* was established at Swarthmore College in 1936 by a gift of approximately four thousand phonograph records, a radio-phonograph, books and musical scores, from the family of Bronson Murray Cutting, late Senator from New Mexico. Its object is to make the best recorded music available to the undergraduates, faculty, and friends of Swarthmore College, in cooperation with the work of the college Department of Music. The collection is kept up to date with current additions.

*The Potter Collection of Recorded Literature,* established in 1950 with accumulated income from the William Plumer Potter Public Speaking Fund, includes a wide variety of recorded poetry, drama and prose. Among the 700 titles on disc and tape are contemporary writers reading from and discussing their works; full length versions of Shakespearean plays and other dramatic repertoire; the literature of earlier periods read both in modern English and in the pronunciation of the time; British and American ballads; lyrical verse in musical settings; and recordings of literary programs held at Swarthmore. These materials are used as adjuncts to the study of literature. The collection is housed in the McCabe Library.

*The Betty Dougherty Spock Memorial Fund,* established through the generosity of friends of the late member of the Class of 1952, provides income for the purchase of dramatic recordings. These are kept with the Potter Collection.

## SPECIAL FUNDS AND LECTURESHIPS

*The William J. Cooper Foundation* provides a varied program of lectures and concerts which enriches the academic work of the college. The Foundation was established by William J. Cooper, a de-

voted friend of the college, whose wife, Emma McIlvain Cooper, served as a member of the Board of Managers from 1882 to 1923. Mr. Cooper bequeathed to the college the sum of $100,000 and provided that the income should be used "in bringing to the college from time to time eminent citizens of this and other countries who are leaders in statesmanship, education, the arts, sciences, learned professions and business, in order that the faculty, students and the college community may be broadened by a closer acquaintance with matters of world interest." Admission to all programs is without charge.

The Cooper Foundation Committee works with the departments and with student organizations in arranging single lectures and concerts, and also in bringing to the college speakers of note who remain in residence for a long enough period to enter into the life of the community. Some of these speakers have been invited with the understanding that their lectures should be published under the auspices of the Foundation. This arrangement has so far produced seventeen volumes:

Lindsay, Alexander Dunlop. *The Essentials of Democracy.* Philadelphia, University of Pennsylvania Press, 1929.

Lowes, John Livingston. *Geoffrey Chaucer and the Development of His Genius.* New York, Houghton Mifflin Co., 1934.

Weyl, Hermann, *Mind and Nature.* Philadelphia, University of Pennsylvania Press, 1934.

*America's Recovery Program,* by A. A. Berle, Jr., John Dickinson, A. Heath Onthank . . . and others . . . London, New York, etc., Oxford University Press, 1934.

Salter, Arthur S., *World Trade and Its Future.* Philadelphia, University of Pennsylvania Press, 1936.

Madariaga, Salvador de. *Theory and Practice in International Relations.* Philadelphia, University of Pennsylvania Press, 1937.

Streit, Clarence Kirshman. *Union Now; a Proposal for a Federal Union of the Democracies of the North Atlantic.* New York, Harper, 1939.

Krogh, August. *The Comparative Physiology of Respiratory Mechanisms.* Philadelphia, University of Pennsylvania Press, 1941.

Griffith, Ernest Stacey. *The Modern Government in Action.* New York, Columbia University Press, 1942.

Linton, Ralph. *The Cultural Background of Personality.* New York, London, D. Appleton-Century Co., 1945.

Wilcox, Clair, Editor. *Civil Liberties Under Attack.* A series of lectures given in 1950-51. Philadelphia, University of Pennsylvania Press, 1951.

Redfield, Robert. *Peasant Society and Culture; an Anthropological Approach to Civilization.* Chicago, The University of Chicago Press, 1956.

Weatherford, Willis D., Jr., Editor. *The Goals of Higher Education.* A series of lectures given in the spring of 1958. Cambridge: Harvard University Press, 1960.

Lovejoy, Arthur Oncken. *Reflections on Human Nature.* Baltimore: Johns Hopkins University Press, 1961.

Rhys, Hedley H., Editor. *Seventeenth Century Science and the Arts.* Princeton: Princeton University Press, 1962.

Brandt, Richard B., Editor. *Social Justice.* Englewood Cliffs: Prentice-Hall, 1962.

Pennock, James Roland, Editor. *Self-government in Modernizing Nations.* Englewood Cliffs: Prentice-Hall, 1965.

*The Arthur Hoyt Scott Horticultural Foundation.* About three hundred twenty-five acres are contained in the College property, including a large tract of woodland and the valley of Crum Creek. Much of this tract has been developed as a horticultural and botanical collection of trees, shrubs and herbaceous plants through the provisions of the Arthur Hoyt Scott Horticultural Foundation, established in 1929 by Mrs. Arthur Hoyt Scott and Owen and Margaret Moon as a memorial to Arthur Hoyt Scott of the Class of 1895. The plant collections are designed both to afford examples of the better kinds of trees, shrubs and herbaceous plants which are hardy in the climate of Eastern Pennsylvania and suitable for planting by the average gardener, and to beautify the campus. There are exceptionally fine displays of hollies, Japanese cherries, flowering crab apples, magnolias and tree peonies, and a great variety of lilacs, rhododendrons, azaleas, daffodils, irises, herbaceous peonies, and hemerocallis. Many donors have contributed generously to the collections.

The Foundation offers lay horticultural educational programs to the general public and an extracurricular course in horticulture to Swarthmore students. These workshops, lectures and classes are designed to cover most, if not all, of the many faceted science/art called gardening. Special emphasis has been placed on acquainting the youth of the area to the significance of plants. Classes from local

elementary schools come to the campus to receive instruction in plants and their relationship to people. In cooperation with the Delaware County Intermediate Unit, an In-Service program is being offered to familiarize teachers with plants that can be used as teaching aids in the classroom and how to grow them.

Aiding the Foundation's staff, in all of its efforts, are the "Associates of the Scott Horticultural Foundation." This organization provides not only financial support but also assistance in carrying out the myriad operations which make up the Foundation's total program. The Associates' newsletter, *Hybrid,* serves to publicize their activities and provides up-to-date information on seasonal gardening topics. (For full information see Bulletin of Swarthmore College, Vol. XXXVII, No. 5.)

*The Boyd and Ruth Barnard Fund for the Advancement of Music at Swarthmore* was established in 1964 by two graduates of the College, Mr. and Mrs. Boyd T. Barnard of Rosemont, Pennsylvania. The fund has been augmented by the 50-year class gifts from the classes of 1917 and 1919. The income from the fund may be used for any activity that contributes to the advancement of music at the college. It has been used, for example, for concerts on the campus, for the purchase of vocal and orchestral scores and other musical literature, and to provide scholarships for students in the Department of Music who show unusual promise as instrumentalists or vocalists. Since 1966 part of the fund has been used to bring to the campus Associates in Performance who direct the chamber music coaching program in the Department of Music and give concerts of chamber music.

*The Gene D. Overstreet Memorial Fund,* given by friends in memory of Gene D. Overstreet (1924-1965), a member of the Political Science Department, 1957-1964, provides income to bring a visiting expert to the campus to discuss problems of developing or modernizing nations and cultures.

*The Benjamin West Lecture,* made possible by gifts from members of the class of 1905 and other friends of the College, is given annually on some phase of art. It is the outgrowth of the Benjamin West Society which built up a collection of paintings, drawings, and prints, which are exhibited, as space permits, in the college buildings. The lecture owes its name to the American artist, who was born in a house which stands on the campus and who became president of the Royal Academy.

# II

## ADMISSION
## EXPENSES
## FINANCIAL AID

*Magill Walk and Parrish Hall*

# ADMISSION

Inquiries concerning admission and applications should be addressed to the Dean of Admissions, Swarthmore College, Swarthmore, Pennsylvania 19081.

## GENERAL STATEMENT

In the selection of students the college seeks those qualities of character, social responsibility, and intellectual capacity which it is primarily concerned to develop. It seeks them, not in isolation, but as essential elements in the whole personality of candidates for admission.

Selection is important and difficult. No simple formula will be effective. The task is to choose those who give promise of distinction in the quality of their personal lives, in service to the community, or in leadership in their chosen fields. Swarthmore College must choose its students on the basis of their individual future worth to society and of their collective realization of the purpose of the college.

It is the policy of the college to have the student body represent not only different parts of the United States but many foreign countries, both public and private secondary schools, and various economic, social, religious, and racial groups. The college is also concerned to include in each class sons and daughters of alumni and of members of the Society of Friends.

Admission to the freshman class is normally based upon the satisfactory completion of a four-year secondary school program preparatory to advanced liberal study. Under some circumstances, students who have virtually completed the normal four-year program in three years will be considered for admission, provided they meet the competition of other candidates in general maturity as well as readiness for a rigorous academic program.

All applicants are selected on the following evidence:

1. Record in secondary school.

2. Recommendations from the school principal, headmaster, or guidance counselor and from two teachers.
3. Rating in the Scholastic Aptitude Test and in three Achievement Tests of the College Entrance Examination Board.
4. Personal interview with one of the Deans or an appointed representative.
5. Reading and experience, both in school and out.

Applicants must have satisfactory standing in school, and in aptitude and achievement tests, and should show strong intellectual interests. They should also give evidence of sturdiness of character, promise of growth, initiative, seriousness of purpose, physical vigor, and a sense of social responsibility. As future members of the college community, they should represent varied interests and backgrounds.

## PREPARATION

The College does not require a set plan of secondary school courses as preparation for its program. The election of specific subjects is left to the student and his school advisers. In general, preparation should include:

1. *Skills:* The following skills are essential to success in college work and should be brought to a high level by study and practice throughout the preparatory period.
   a. The use of the English language with accuracy and effectiveness in reading, writing, and speaking.
   b. The use of the principles of mathematics.
   c. The use of one, or two, foreign languages to the point of reading prose of average difficulty. The College encourages students to study at least one language for four years, if possible.

2. *Subjects:* All, or almost all, of the preparatory course should be composed of the subjects listed in the following four groups. Variations of choice and emphasis are acceptable although some work should be taken in each group.

   *History and Social Studies:* African, American, Asian, English, European, and ancient history; political, social, and economic problems of modern society.

   *Literature and Art:* American, English, and foreign literature; music; art.

*Natural Science and Mathematics:* chemistry, physics, biology, astronomy; algebra, geometry, trigonometry, and calculus. Those planning to major in engineering should present work in chemistry, physics, and four years of mathematics including algebra, geometry and trigonometry.

*Languages:* English, Latin, Greek, German, French, Spanish, Russian, other European or Oriental languages. Applicants should present the strongest possible command of at least one foreign language.

## APPLICATIONS AND EXAMINATIONS

Applications must be initiated prior to January 15, and all applications must be completed by February 1. A personal information form will be sent upon request, and this form should be returned promptly, together with the non-refundable application fee of $20.00. The College then sends the remainder of the application materials. Applicants are encouraged to complete their applications to the College as early in the fall of their senior year as possible. Although Swarthmore does not have an "early decision" program, preliminary readings of completed applications are made at an early date to determine regional and national award winners.

All applicants for freshman admission are required to take the Scholastic Aptitude Test and three Achievement Tests given by the College Entrance Examination Board. English Composition is required and the other two Achievement Tests should be selected from two different fields. Applicants for Engineering must take one Achievement Test in Mathematics.

Applicants must arrange to take the Scholastic Aptitude Test and the Achievement Tests not later than January of the senior year. Results from later test dates will not reach the Admissions Committee in time to be considered with the applicant's other credentials.

Application to take these tests should be made directly to the College Entrance Examination Board, Box 592, Princeton, New Jersey 08540. A bulletin of information may be obtained without charge from the Board. Students who wish to be examined in any of the following western states, provinces, and Pacific areas—Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming, Alberta, British Columbia, Manitoba, Saskatchewan, Mexico, Australia, and all Pacific Islands including Formosa and Japan—should address their

inquiries and send their applications to the College Entrance Examination Board, Box 1025, Berkeley, California 94701. Application should be made to the Board at least a month before the date on which the test will be taken.

No additional tests are required of candidates for scholarships. All applicants who would like to be considered for any of our scholarships should complete their applications at the earliest possible date. Information concerning financial aid will be found on pages 28-41.

## THE INTERVIEW

An admissions interview with a representative of the College is a requirement in making application to Swarthmore. Applicants are expected to take the initiative in arranging for this interview. Those who can reach Swarthmore with no more than a half day's trip are urged to make an appointment to visit the College for this purpose.* Other applicants should request the Office of Admissions to arrange a meeting with an alumni representative in their own area. Interviews with alumni representatives must be requested by February 1 and all interviews should be completed before February 15. Financial aid applicants and applicants for honorary awards are urged to have their interviews by January 1. Candidates will not be able to have campus interviews from March 1 to May 1 but a tour of the campus may be arranged during this period. Appointments at the College can be made by calling or writing the Office of Admissions, 215-KI 4-7900, Ext. 445.

## ADMISSION DECISIONS

Notices of the action of the Admissions Committee will be mailed about April 15.

## ADVANCED PLACEMENT

Freshmen may apply for advanced standing or placement in particular courses if they have taken college level courses and the Advanced Placement Tests of the College Entrance Examination Board. Decisions are made by the departments concerned. Every effort is made to place students in the most advanced courses for which they are qualified.

*Directions for reaching the College can be found on page 6 of this catalogue.

## APPLICATIONS FOR TRANSFER

The college accepts a limited number of transfer students. Applicants for transfer must have had a good scholastic record in the institution attended and must present full credentials for both college and preparatory work, including a statement of honorable dismissal. They must take the Scholastic Aptitude Test given by the College Entrance Examination Board if this test has not been taken previously.

As a general practice, transfer students are not admitted to advanced standing later than the beginning of the sophomore year. Four semesters of study at Swarthmore College constitute the minimum requirement for a degree, two of which must be those of the senior year. Applications for transfer must be filed by March 15 of the year in which entrance is desired. Decisions on these applications are announced early in June. Only under exceptional circumstances are students admitted for transfer eligible for financial assistance during their first year at Swarthmore.

# EXPENSES

## TUITION AND FEES

Charges for the academic year 1974-75 (two semesters):

| | |
|---|---|
| Tuition | $2,870 |
| General Fee | 255 |
| Board and Room | 1,425 |
| Total Resident Charges | $4,550* |

While a general charge for board and room is made, this may be divided into $750 for board and $675 for room. $55 of the general fee of $255 has been designated Student Activity Fee. The balance covers library and laboratory fees, athletic fees, student health services and other items.

Payment of one-half of the total sum is due not later than the first day of classes each semester. Payments received during the first fifteen days after the beginning of classes will be subject to a one per cent late payment fee and any payments received after the fifteen-day period will be subject to a five per cent late payment fee. Bills are mailed before the opening of each term. Payments should be made by check or draft to the order of SWARTHMORE COLLEGE. A student is not a registered student at Swarthmore College, nor on any class roll, until his bill is paid. Correspondence about financial matters should be addressed to Miss Caroline Shero, Associate Controller.

Students who wish to charge Book Store purchases, laboratory breakage fees, etc., may do so by maintaining a student deposit account at the Business Office against which charge checks may be drawn. Cash withdrawals may also be made. Students will be notified when overdrafts occur and no cash withdrawals may be made unless a cash balance is maintained. A minimum deposit of $100.00

*An advance deposit of $100 is required of all new students in order to reserve a place in college for the coming year. A similar deposit of $50 is required of returning students. These deposits are credited against the bill for tuition, board, and room.

The real costs incurred last year by the College approximated $7,000 for each student. The difference between this and tuition and fees has been made up in the past by income from previous gifts or current gifts received from alumni, parents and friends.

in September is suggested and all students are urged to maintain such an account for their convenience.

No reduction or refunding of tuition can be made on account of absence, illness, voluntary withdrawal, or dismissal from college. No reduction or refund will be made for failure to occupy the room assigned for a given term, nor is the general fee refundable. In case of absence or withdrawal from the college and provided due notice has been given in advance to the Business Office, there will be a refund of two-thirds of the board charge for any time in excess of two weeks.

Students engaged in independent projects away from the College for which regular academic credit is anticipated are expected to register in advance in the usual way and pay normal tuition. If the student is away from the College for a full semester no charge for board, room or general fee will be made but if a student is away only for a part of a semester, board may be charged on a pro rata basis by prior arrangement.

The regular College tuition covers the normal program of four courses per term as well as variations of as many as five courses or as few as three courses. Students who elect to carry more than five courses incur a unit charge for the additional course ($360) or half course ($180), although they may within the regular tuition so vary their programs as to average as many as five courses in the two semesters of any academic year.

## TUITION PAYMENT PLAN

Many of the parents of students may wish to pay tuition, fees, and residence charges on a monthly basis. Details of a monthly payment plan offered by the Girard Bank of Philadelphia, Pennsylvania will be furnished by the College prior to issuance of the first semester's bill.

## ACCIDENT AND SICKNESS INSURANCE

The college makes available both accident and accident and sickness insurance to students through Fred S. James and Co. of Boston, Massachusetts. Accident coverage alone costs $16.45 per year (12 months). The combined accident and sickness policy is available at an annual cost of $41.35. At least accident coverage is required for all students who participate in intercollegiate athletic activities and the combined accident and sickness policy is particularly recommended. Application forms are mailed to all students during the summer.

# FINANCIAL AID

The College strives to make it possible for all students who are admitted to attend Swarthmore, regardless of their financial circumstances, and to enable them to complete their education when financial reverses take place. Thirty-five per cent of the total student body currently receive aid from the College, and aid from other sources brings to approximately forty-five per cent the number of students receiving financial assistance. Financial aid awarded by the College is usually a combination of grant, loan, and student employment.

A prospective scholarship student must apply for financial aid at the time of his application for admission, but financial need does not influence admissions decisions. Instructions for obtaining and filing a Parents' Confidential Statement with the College Scholarship Service are included on the admissions application. The principles of this agency and careful review of its recommendations by the Committee on Financial Aid determine the amount of aid in each case. Essentially, this amount is the difference between the College budget and a family's anticipated contribution. That contribution is determined by weighing the family's income and assets against demands made upon it by such items as taxes, medical expenses, and other children. It also includes the expectation of $300 to $400 from the student's summer earnings as well as a portion of his or her personal savings and assets.

For 1974-75 the college bill, which includes tuition, room and board, and a comprehensive fee, will be $4,550. This comprehensive fee covers not only the usual student services—health, library, laboratory fees, for example—but admission to all social, cultural, and athletic events on campus. The total budget figure against which aid is computed is $5,120. This allows $570 for books and personal expenses, exclusive of travel.

When a student receives financial aid from a source other than the College, the College subtracts the amount of that financial aid from his Swarthmore award. This equitable distribution of total available

resources enables the College to assist additional students. Thus, the amount of financial aid a student may expect to receive from the College is determined by other grants he may receive as well as by the anticipated family contribution.

In keeping with the policy of basing financial aid upon need, the College reviews each student's award annually. Early in January the Director of Financial Aid mails to each student who has aid a new Parents' Confidential Statement and requests a copy of the parents' (or, if he is independent, the student's) Federal Income Tax Return. This information is analyzed by the College Scholarship Service and reviewed by the Committee on Financial Aid along with the student's personal and academic record. The expected contribution from a student's summer earning increases by approximately $100 each year as does the proportion of his expected contribution from savings. A student's aid is not withdrawn unless he no longer demonstrates need. The proportion of grant to loan may vary, however, contingent upon his academic record.

Students who have not previously received financial aid may apply if special circumstances have arisen. Transfer students who are not graduates of two-year colleges are usually not eligible for financial aid in their first year at Swarthmore. Students who marry may continue to apply for aid, but a contribution from the parents is expected in an amount equivalent to the contribution were the student single.

For the academic year 1974-75 the College has awarded approximately $800,000 in grants. About two-thirds of that sum was provided through the generosity of alumni and friends by special gifts and the endowed scholarships listed below. The Federal government also makes Basic Opportunity Grants and Supplementary Educational Opportunity Grants available. It is not necessary to apply for a specific scholarship; the Committee on Financial Aid decides who are to receive endowed scholarships and others are helped from general scholarship funds. *Financial need is a requirement for all scholarships listed below unless otherwise indicated.*

## Swarthmore College National and Regional Scholarships

Swarthmore College awards each year a number of four-year National and Regional Scholarships to the outstanding men and women entering the freshman class. National Scholarships are awarded to freshmen not eligible for Regional Scholarships.

*Midwest Scholarships* are awarded each year to at least one man and one woman who reside in Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, or Wisconsin.

*New England Scholarships* are awarded each year to at least one man and one woman who reside in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island or Vermont.

*Pacific Scholarships* are awarded each year to at least one man and one woman who reside in Alaska, California, Hawaii, Oregon or Washington.

*Rocky Mountain Scholarships* are awarded each year to at least one man and one woman who reside in Arizona, Colorado, Idaho, Montana, New Mexico, Utah, or Wyoming.

*Southeast Scholarships* are awarded each year to at least one man and one woman who reside in Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, or Tennessee.

Based on the general plan of the Rhodes Scholarships, the awards are made to those candidates who, in the opinion of Committees of Award, rank highest in scholarship, leadership, character, physical vigor, and personality. Whenever feasible, finalists for National and Regional Scholarships will be interviewed by the appropriate Committee of Award.

The amount of the annual award varies from $200 to $5,000 according to the financial need of the winner. In those instances where there is no financial need, scholarships carry an honorary award.

## Other Scholarships for Men and Women

*The Vivian B. Allen Foundation* provides scholarship aid to enable foreign students to attend Swarthmore College, as part of the Foundation's interest in the international exchange of students.

*The Frank and Marie Aydelotte Scholarship* is awarded biennially to a new student who shows promise of distinguished intellectual attainment based upon sound character and effective personality. The award is made in honor of Frank Aydelotte, President of the College from 1921-1940, and originator of the Honors program at Swarthmore, and of Marie Osgood Aydelotte, his wife.

*The Boyd and Ruth Barnard Fund grants* are awarded by the Department of Music to students at the College who show unusual promise as instrumentalists or vocalists and who need help to pay for private instruction.

*The Curtis Bok Scholarship* was established in the College's Centennial Year 1964 in honor of the late Philadelphia attorney, author and jurist, who was a Quaker and honorary alumnus of Swarthmore. The scholarship is assigned annually to a junior or senior whose qualities of mind and character indicate a potential for humanitarian service such as Curtis Bok himself rendered and would have wished to develop in young people. Students in any field of study, and from any part of this country or from abroad, are eligible. The scholarship is renewable until graduation.

*The Edward S. Bower Memorial Scholarship,* established by Mr. and Mrs. Ward T. Bower in memory of their son, Class of '42, is awarded annually to a man or woman student who ranks high in scholarship, character, and personality.

*The Robert C. Brooks Scholarship* was established as a memorial to Professor Brooks by a number of his former students. It is available to a major in Political Science in the junior or senior year.

*The Edna Pownall Buffington Fund* was established during the College's Centennial Year of 1964. The income from this Fund is used to provide scholarships for a student or students attending Swarthmore College who are concentrating their studies in the field of the social sciences and who indicate an interest in the objects or purposes of the American Friends Service Committee and a desire following their graduation and post-graduate work to serve in those fields. Awards are made to students in any of the four classes.

*The Chi Omega Scholarship* provides an award annually to a member of the freshman class. Preference is given to daughters or sons of members of the fraternity.

*The Sarah Antrim Cole Scholarship* was founded by her parents in memory of Sarah Antrim Cole of the Class of 1934. It is awarded to a graduate of the Worthington High School, Worthington, Ohio.

*The Charles A. Collins Scholarship Fund,* awarded every year to a deserving student who is in need of financial assistance, in accordance with the donor's will.

*The N. Harvey Collisson Scholarship* established by his family and the Olin Mathieson Charitable Trust in memory of N. Harvey Collisson of the Class of 1922 is awarded to a freshman man or woman. In making selections the committee will place emphasis on character, personality and ability.

*The Delta Gamma Scholarship* is to be awarded to a blind student at Swarthmore College. In any year in which there is no such candidate the fund may be awarded to a freshman woman.

*The Francis W. D'Olier Scholarship,* in memory of Francis W. D'Olier of the Class of 1907, is awarded to a freshman man or woman. In making selections, the committee will place emphasis on character, personality and ability.

*The Robert K. Enders Scholarship* is to be awarded annually to a senior student who has shown excellence in pursuit of a major in a biological topic, if possible reflecting Dr. Enders' concern for the value of field work.

*The Howard S. and Gertrude P. Evans Scholarship Fund* provides scholarships for worthy students, preference being given to students showing highest standards in scholarship from high schools of Delaware County, Pennsylvania.

*The Stella and Charles Guttman Foundation Scholarships* were established in 1964 by a grant from the Foundation to provide scholarships to defray all or part of the cost of tuition and fees for students who require financial assistance. Preference is given to students of recognized ability who have completed two academic years of college and who are contemplating graduate or professional study. The scholarships are renewable for a second year.

*The Rachel W. Hillborn Scholarship* was founded by Anne Hillborn Philips of the Class of 1892 in memory of her mother, with the stipulation that the income shall go to a student in the junior or senior class who is studying for service in the international field. Preference will be given to a Friend or to one who intends to contribute to world understanding through diplomatic service, participation in some international government agency, the American Friends Service Committee, or similar activities.

*The Everett L. Hunt Scholarship,* endowed by the Class of 1937 in the name of its beloved emeritus professor and dean, provides an unrestricted scholarship to be awarded annually by the College.

*The Kappa Kappa Gamma Scholarship* provides an award to a member of the freshman class, renewable each year. Preference is given to a relative of members of the fraternity. In the absence of a relative it may be awarded at the discretion of the College.

*The Lafore Scholarship* is awarded in memory of John A. Lafore of the Class of 1895. The college in granting this scholarship will

give preference to qualified candidates who are descendants of Amand and Margaret White Lafore.

*The Ida and Daniel Lang Scholarship* established by their son, Eugene M. Lang of the Class of 1938, provides financial assistance for a man or woman who ranks high in scholarship, character and personality.

*The E. Hibberd Lawrence Scholarship* provides for a scholarship to an incoming freshman man or woman who ranks high in scholarship, character, and personality.

*The Christian R. and Mary F. Lindback Foundation Scholarship* is awarded to deserving students from the States of Pennsylvania, New Jersey, Delaware or Maryland.

*The Thomas B. McCabe Achievement Awards,* established by Thomas B. McCabe, '15, are awarded to entering students from the Delmarva Peninsula, Northern New England (Maine, New Hampshire, or Vermont) and Delaware County, Pennsylvania, who give promise of leadership. In making selections, the Committee will place emphasis on ability, character, personality, and service to school and community. These awards provide a minimum annual grant of tuition, or up to $5000 depending on need.

*The James E. Miller Scholarship.* Under the will of Arabella M. Miller, funds are available annually for students from Delaware County (with preference for residents of Nether Providence Township).

*The Minnesota Mining and Manufacturing Company Scholarship* is awarded annually to a student selected by the Scholarship Committee.

*The Margaret Moore Scholarship Fund* provides scholarships to foreign students with a preference given to students of South Asian origin.

*National Society of Professional Engineers Scholarships* are awarded annually by the College in cooperation with the Society. Prospective engineers apply for these awards through their home state's branch of the NSPE. NSPE Scholarships currently carry a minimum stipend of $1000, with assistance in excess of that amount based on the scholar's need.

*The Howard Osborn Scholarships,* established by Howard Osborn in memory of his mother and father, Viola L. Osborn and Frank Osborn, are awarded to worthy students of good character who maintain satisfactory grades and who require financial assistance.

*The Rogers Palmer Scholarship,* established in 1973 by Rogers Palmer, of the Class of 1926, is awarded to a member of the freshman class who shows promise of leadership and who has need of financial assistance. The scholarship is renewable for a total of four years at the discretion of the College.

*The Cornelia Chapman and Nicholas O. Pittenger Scholarship* established by her family and friends is awarded to an incoming freshman man or woman who ranks high in scholarship, character and personality and who has need for financial assistance.

*The Presser Foundation Scholarship* is awarded annually to one or more students selected by the President and the Department of Music who plan to become teachers of music.

*The Robert Pyle Scholarship* was established by his sisters, Margery Pyle and Ellen Pyle Groff, in memory of Robert Pyle of the Class of 1897 and for many years a member of the Board of Managers. Applicants who show promise of intellectual attainment based upon sound character and effective personality and who reside in Chester County are given preference.

*The RCA Scholarship* is awarded to a young man or woman who is making a creditable academic record in the field of science or engineering at the undergraduate level. The appointment is usually made for the junior or senior year.

*The Reader's Digest Foundation Endowed Scholarship Fund* provides scholarships annually for students selected by the Scholarship Committee.

*The Adele Mills Riley Memorial Scholarship,* founded by her husband, John R. Riley, was awarded for the first time for the academic year 1964-65. Under the provisions of this scholarship, an annual award subject to renewal is made to a deserving student, man or woman. Selection stresses the candidate's capacity for significant development of his or her interests and talents during the college years. Qualities of intellectual promise as well as potential for service are sought in making this appointment.

*The Byron T. Roberts Scholarship,* endowed by his family in memory of Byron T. Roberts, '12, is awarded annually to an incoming student and is renewable for his or her years of study at Swarthmore.

*The Louis N. Robinson Scholarship* was established during the College's Centennial year by the family and friends of Louis N. Robinson.

Mr. Robinson was for many years a member of the Swarthmore College faculty and founder of the Economics Discussion Group. A member of the junior or senior class who has demonstrated interest and ability in the study of Economics is chosen for this award.

*The David Barker Rushmore Scholarship,* established in honor of David Barker Rushmore, Class of 1894, by his niece Dorothea Rushmore Egan '24, is awarded annually to a worthy student who plans to major in Engineering or Economics.

*The Katharine Scherman Scholarship,* is awarded to a student with a primary interest in the arts and the humanities, having special talents in these fields. Students with other special interests, however, will not be excluded from consideration. Awarded in honor of Katharine Scherman, of the Class of 1938, it is renewable for the full period of undergraduate study.

*The Clinton G. Shafer Scholarship* endowed by his family in memory of Clinton G. Shafer, of the Class of 1951, is open to students interested in engineering and physical science. The committee in making its selection will have regard for character, personality and leadership.

*The Thomas H. and Mary Williams Shoemaker Fund* provides scholarships annually for children of Friends.

*The Marshall P. Sullivan Scholarship Fund* was established by Creth and Sullivan, Inc., in memory of Marshall P. Sullivan of the Class of 1897. Preference will be given to graduates of George School, but if no suitable candidate applies from this school, graduates of other Friends schools or other persons will be eligible.

*The Jonathan K. Taylor Scholarship,* in accordance with the donor's will, is awarded by the Board of Trustees of the Baltimore Monthly Meeting of Friends. The scholarship is first open to descendants of the late Jonathan K. Taylor. Then, while preference is to be given to members of the Baltimore Yearly Meeting of Friends, it is not to be confined to them when suitable persons in membership cannot be found.

*The Phebe Anna Thorne Fund* provides an income for scholarships for students whose previous work has demonstrated their earnestness and ability. This gift includes a clause of preference to those students who are members of the New York Monthly Meeting of Friends.

*The Audrey Friedman Troy Scholarship,* established by her husband, Melvin B. Troy '48, is awarded to a freshman man or woman.

The scholarship is renewable for four years at the discretion of the College. In awarding the scholarship, prime consideration is given to the ability of the prospective scholar to profit from a Swarthmore education, and to be a contributor to the College and ultimately to society.

*The Daniel Underhill Scholarship* was given by Daniel Underhill '94, in memory of his grandfather, Daniel Underhill, member of the first Board of Managers.

*The William Hilles Ward Scholarship* in memory of William Hilles Ward of the Class of 1915, is to be awarded annually, preferably to a student who plans to major in science. The committee in making its selection, will have regard for candidates who are most deserving of financial assistance.

*The Westbury Quarterly Meeting, N.Y., Scholarship,* is awarded annually by a committee of that Quarterly Meeting.

*The Barclay and Edith Lewis White Scholarship* is awarded annually by the Music Department to a student of music.

*The Thomas H. White Scholarship* provides financial aid for a deserving student.

*The Samuel Willets Fund.* This fund provides an annual income for scholarships. A portion of the fund is assigned for scholarships in the name of Mr. Willets' children, Frederick Willets, Edward Willets, Walter Willets, and Caroline W. Frame.

*The I. V. Williamson Scholarship.* Preference is given to graduates of Friends Central, George School, New York Friends Seminary, Baltimore Friends School, Wilmington Friends School, Moorestown Friends School, Friends Academy at Locust Valley, Sidwell Friends School and Brooklyn Friends School.

*The Edward Clarkson Wilson Scholarship* has been established at Swarthmore by friends of Edward Clarkson Wilson, '91, formerly Principal of the Baltimore Friends School. It will be awarded each year to a former student of the Baltimore Friends School, who has been approved by the faculty of the school, on the basis of high character and high standing in scholarship.

*The Edward Clarkson Wilson and Elizabeth T. Wilson Scholarship* provides financial aid for a deserving student.

*The Letitia M. Wolverton Scholarship Fund,* given by Letitia M. Wolverton of the Class of 1913, provides scholarships for members of the junior and senior classes who have proved to be capable students

and have need for financial assistance to complete their education at Swarthmore College.

The income from each of the following funds is awarded at the discretion of the college.

*The Barclay G. Atkinson Scholarship Fund.*
*The Rebecca M. Atkinson Scholarship Fund.*
*The Class of 1913 Scholarship Fund.*
*The Class of 1914 Scholarship Fund.*
*The Class of 1915 Scholarship Fund.*
*The Class of 1917 Scholarship Fund.*
*The William Dorsey Scholarship Fund.*
*The George Ellsler Scholarship Fund.*
*The Caroline W. Frame Scholarship Fund.*
*The Joseph E. Gillingham Fund.*
*The Thomas L. Leedom Scholarship Fund.*
*The Sarah E. Lippincott Scholarship Fund.*
*The Mark E. Reeves Scholarship Fund.*
*The Frank Solomon Memorial Scholarship Fund.*
*The Mary Sproul Scholarship Fund.*
*The Helen Squier Scholarship Fund.*
*The Frances Holmes Strozier Memorial Scholarship Fund.*
*The Joseph T. Sullivan Scholarship Fund.*
*The Deborah F. Wharton Scholarship Fund.*
*The Thomas Woodnutt Scholarship Fund.*

## Scholarships for Men

*The Book and Key Scholarship,* established by the Book and Key men's senior honorary society in 1965 when the Society dissolved itself, is awarded each year to a senior man who has shown quality of leadership and has demonstrated through past performance his eagerness to give service to college and community. He should rank high in scholarship, character and personality.

*The Sarah Kaighn Cooper Scholarship,* founded by Sallie K. Johnson in memory of her grandparents, Sarah Kaighn and Sarah Cooper, is awarded to a man in the Junior Class who is judged by the faculty

to have had, since entering College, the best record for scholarship, character, and influence.

*The Howard S. Evans 1903 Scholarship* provides scholarships for worthy male students. The awards are made to those who stand high in scholarship, character, and personality. Preference is given first to applicants preparing for the ministry of the Episcopal Church, second, to that of other protestant denominations; and third, to those interested in Engineering or Economics.

*The Donald Renwick Ferguson Scholarship,* established by Mrs. Amy Baker Ferguson, in memory of her husband, Donald Renwick Ferguson, M.D., of the Class of 1912, is awarded to a young man who is looking forward to the study of medicine.

*The Aaron B. Ivins Scholarship* is awarded annually to a young man of the graduating class of Friends Central School, Overbrook, Philadelphia. This scholarship is awarded by the faculty of Friends Central School, and is subject to the approval of Swarthmore College.

*The Howard Cooper Johnson Scholarship,* established by Howard Cooper Johnson '96, is awarded on the basis of all-around achievement to a male undergraduate who is a member of the Society of Friends.

*The Walter W. Krider Scholarship* was established by his wife and daughter for a young man who ranks high in scholarship, character and personality.

*The Scott B. Lilly Scholarship,* endowed by Jacob T. Schless of the Class of 1914 at Swarthmore College, was offered for the first time in 1950. This scholarship is in honor of a former distinguished Professor of Engineering and, therefore, students who plan to major in engineering will be given preference. An award is made annually.

*The Peter Mertz Scholarship* is awarded to an entering freshman outstanding in mental and physical vigor, who shows promise of spending these talents for the good of the college community and of the larger community outside. The award was established in 1955 by Harold, LuEsther and Joyce Mertz in memory of Peter Mertz, who was a member of the class of 1957. It is renewable for all four undergraduate years.

*The T. H. Dudley Perkins Memorial Scholarship* is awarded annually to an entering freshman on the basis of qualities of manhood, force of character and leadership; literary and scholastic ability; physi-

cal vigor as shown by participating in out-of-doors sports or in other ways.

*The Anthony Beekman Pool Scholarship.* This scholarship is awarded to an incoming freshman man of promise and intellectual curiosity. It is given in memory of Tony Pool of the Class of 1959.

*The William G. and Mary N. Serrill Honors Scholarship* is a competitive scholarship for men, awarded to a candidate for admission to the College, based upon the general plan of the Rhodes Scholarships. Preference will be given to men who are residents of Abington Township, including Jenkintown and Glenside, Montgomery County, Pa.

*The Philip T. Sharples Scholarship,* a four-year scholarship open to entering freshmen, is designed to honor and encourage young men in engineering or physical science. The committee, in making its selections, will have regard for candidates who rank highest in scholarship, character, personality, leadership, and physical vigor. At least one scholarship will be given each year.

*The Newton E. Tarble Award,* established by Newton E. Tarble of the Class of 1913, is granted to a freshman man who gives promise of leadership, ranks high in scholarship, character and personality, and resides west of the Mississippi River or south of Springfield in the State of Illinois.

## Scholarships for Women

*The Mary Lippincott Griscom Scholarship* is to be given to a girl with financial need, who ranks high in character, personality and scholarship. Preference would be given to a member of the Society of Friends.

*The George K. and Sallie K. Johnson Fund,* provides aid during the senior year for young women who are fitted to become desirable teachers.

The income of the *Kappa Alpha Theta Scholarship Fund,* given by members and friends of the Kappa Alpha Theta Fraternity at Swarthmore, is awarded annually to a woman student.

*The Jessie Stevenson Kovalenko Scholarship Fund* is the gift of Michel Kovalenko in memory of his wife. This scholarship is to be awarded to a student, preferably a woman, who is in her junior or senior year and who is a major in astronomy, or to a graduate of the

College, preferably a woman, for graduate work in astronomy at Swarthmore or elsewhere.

*The Mary T. Longstreth Scholarship* was founded by Rebecca C. Longstreth in memory of her mother and is to be awarded annually to assist a young woman student to pursue her studies in the College.

*The Clara B. Marshall Scholarship,* established by the will of Dr. Clara B. Marshall, is awarded to a woman at Swarthmore College with preference given to descendants of her grandfathers, Abram Marshall or Mahlon Phillips.

*The Harriet W. Paiste Fund* provides a scholarship for a young woman who is a member of the Society of Friends (Philadelphia Yearly Meeting).

*The Mary Coates Preston Scholarship Fund.* A sum of money has been left by the will of Elizabeth Coates, the annual interest of which provides a scholarship to a young woman student in Swarthmore College. Preference is given to a relative of the donor.

*The Lily Tily Richards Scholarship,* established by Peirce L. Richards, Jr., in memory of his wife, Lily Tily Richards '29, is awarded to a woman distinguished for high scholarship, character, personality and physical vigor.

*The Annie Shoemaker Scholarship* is granted annually to a young woman of the graduating class of Friends Central School, Overbrook, Philadelphia. This scholarship is awarded by the faculty of Friends Central School, and is subject to the approval of Swarthmore College.

*The Sarah W. Shreiner Scholarship* given in loving memory by her daughter, Leah S. Leeds of the Class of 1927, is awarded annually to a woman who ranks high in scholarship, character and personality.

*The Titus Scholarships* established by the will of Georgiana Titus of the Class of 1898 are awarded to young women in order that they may pursue their studies in the College.

*The Mary Wood Fund* provides a scholarship which may be awarded to a young woman who is preparing to become a teacher.

## LOAN FUNDS

Long term loan funds with generous repayment terms combine with Swarthmore's program of scholarships and grants to enable the College to meet the needs of each student. National Direct Student Loan

Funds are awarded by the College under the guidelines of the United States Office of Education and its own need determination policies. The College also maintains special loan funds which are listed below. Interest on both National Defense Student Loans and Swarthmore College loans is 3% on the unpaid balance, beginning with the repayment period, which starts nine months after the student terminates his higher education. The College tries to maintain a ceiling of $1,000 per year on loan funds it administers. The average loan, however, is considerably less and the College makes every effort to see that the annual amount of loan does not exceed the amount that a student may earn through part-time employment. This enables students, who wish to avoid indebtedness to repay loans annually from campus earnings.

*The Class of 1916 Loan Fund*
*The Class of 1920 Loan Fund*
*The Class of 1936 Loan Fund*
*The Class of 1937 Loan Fund*
*The John A. Miller Loan Fund*
*The Paul M. Pearson Loan Fund*
*The Thatcher Family Loan Fund*
*The Ellis D. Williams Fund*
*The Swarthmore College Student Loan Fund*

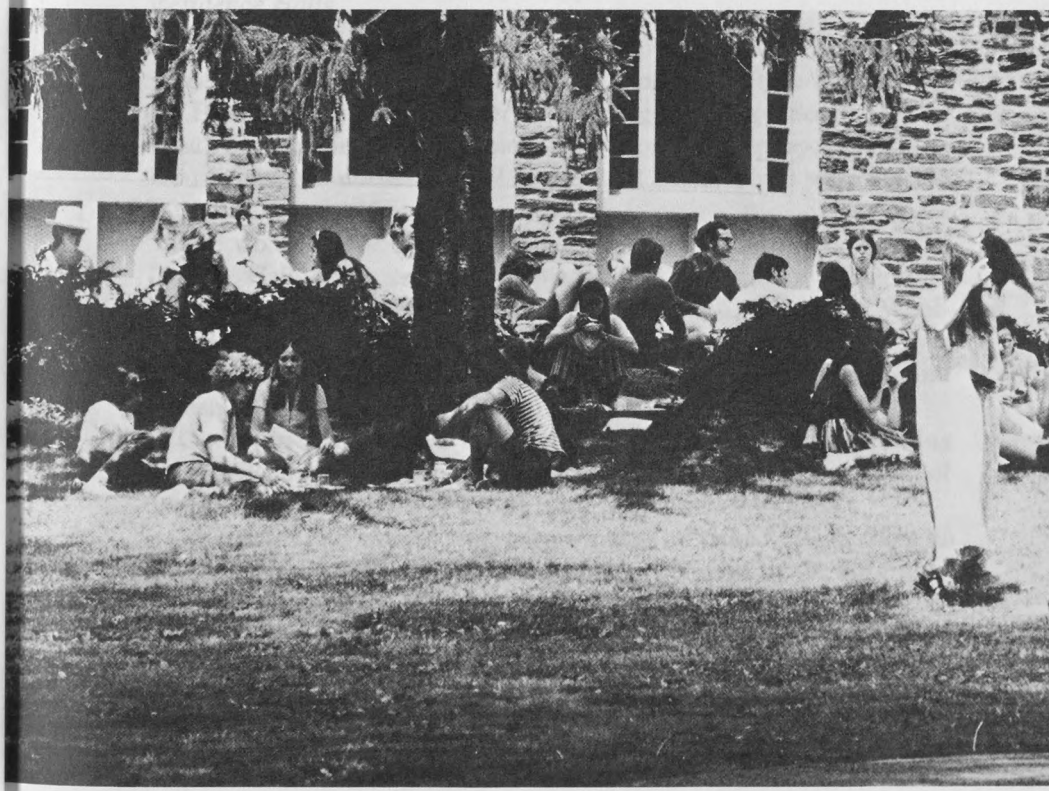
*The Joseph W. Conard Memorial Fund,* established by friends of the late Professor Conard, provides short-term loans without interest to meet student emergencies. Income earned by *The Alphonse N. Bertrand Fund* is also available for this purpose.

## STUDENT EMPLOYMENT

Student employment on the Swarthmore campus is handled by the Student Employment Office, which is under student direction. Jobs are available in such areas as the dining hall, library, departmental offices and the post office, and applications are made when students arrive in the fall. Rates of pay run from $1.70 to $2.40 per hour, and it is possible for a student to earn between $300 and $600 a year. The Student Employment Office takes financial need into account in assigning jobs, but there are usually jobs for all who wish employment. The Student Employment Office also publicizes local off-campus employment opportunities. Students are generally able to carry a moderate working schedule without detriment to their academic performance.

# III

## COLLEGE LIFE
## STUDENT COMMUNITY



# COLLEGE LIFE

## HOUSING

Swarthmore is primarily a residential college, conducted on the assumption that an important element in education comes from close association of students and instructors. Most students live in the College dormitories, which offer a diversity of housing styles including a program in coeducational housing as well as a variety of single sex dormitories and sections. In addition, many members of the faculty live on or near the campus, and are readily accessible to students.

*Residence Halls*

There are seven dormitories for men; two sections of Wharton Hall, named in honor of its donor, Joseph Wharton, at one time President of the Board of Managers, Palmer and Pittenger Halls on South Chester Road, one building on the former Mary Lyon School property, Ashton House, and two dormitories, Hallowell and Dana, which were opened in September of 1967.

The women's dormitories include the upper floors in the wings of Parrish Hall, three sections of Worth Hall, the gift of William P. Worth and J. Sharples Worth, as a memorial to their parents, Woolman House, and one floor of Willets Hall, made possible largely by a bequest from Phebe Seaman, and named in honor of her mother and aunts.

Dormitories designated for the program of coeducational housing include Roberts Hall, one building in Mary Lyon, four sections of Wharton, three sections of Worth, and two floors of Willets.

The men's and women's dormitories may be visited by members of the opposite sex according to procedures established by the dormitory sections in consultation with the Deans.

All freshmen are assigned to rooms by the Deans. Other students choose their rooms in an order determined by lot. Special permission must be obtained from the Deans to room outside the dormitories.

Dormitories are closed to student occupancy during Christmas vacation. During spring vacation, students may occupy college rooms only by special arrangement with the Deans and payment of the required fee. Students enrolled for the fall semester only are expected to vacate their dormitory rooms promptly after their last examination. Freshmen, sophomores and juniors are expected to leave college immediately after their last examination in the spring so that their rooms may be readied for use by Commencement visitors.

The insurance program for the College is designed to provide protection for College property and does not include the property of students or others. It is therefore suggested that students and their parents should review their insurance program in order to be sure that coverage is extended to include personal effects while at college.

*Sharples Dining Hall*

All students living on campus have their meals in the Philip T. Sharples Dining Hall. The dining hall is closed during vacations.

*Tarble Social Center*

Through the generosity of Newton E. Tarble of the Class of 1913, the building which formerly housed the College Library has been completely renovated and serves as the College's Social Center. It includes recreational facilities, lounges, meeting rooms, and a snack bar.

*Black Cultural Center*

A Black Cultural Center, located in the Caroline Hadley Robinson House, provides a library and various cultural activities of special interest to black students. The program is planned by a committee of black students, faculty, and administration.

*Women's Center*

The Women's Center, housed in Bond, was established to draw all women of the Swarthmore community together through common concerns. The Center, which serves faculty, students, faculty wives, staff and alumnae, maintains a library of resource books, pamphlets and periodicals, provides information, and sponsors a variety of programs, lectures, discussions and symposia for all members of the College community about issues relating to women.

## RELIGIOUS LIFE

The religious life of the college is founded on the Quaker principle that the seat of spiritual authority lies in the Inner Light of each

individual. The Society of Friends is committed to the belief that religion is best expressed in the quality of everyday living. There are accordingly no compulsory religious exercises. Students are encouraged to attend the churches of their choice. Five churches are located in the borough of Swarthmore; other churches and synagogues in the nearby towns of Morton, Media, Chester, and Springfield. The Swarthmore Friends Meeting House is located on the campus. Students are cordially invited to attend its meeting for worship on Sunday. Extracurricular groups with faculty cooperation exist for the study of the Bible and the exploration of common concerns in religion.

## STUDENT WELFARE

### *Health*

The college physicians hold office hours every weekday at the college, where students may consult them without charge. Students should report any illness to the college physicians, but are free to go for treatment to another doctor if they prefer to do so.

As a part of the matriculation process each student must submit a brief medical history and health certificate, prepared by the family physician on a form supplied by the College. Pertinent information about such matters as physical reserve, unusual medical episodes, severe allergies, or psychiatric disturbances will be especially valuable to the college Health Service in assisting each student.

The Health Center staff cooperates closely with the Departments of Physical Education. Recommendations for limited activity are made for those students with physical handicaps. In occasional cases a student may be excused entirely from the requirements of the Physical Education Departments, although adaptive programs are offered.

The Worth Health Center, a gift of the Worth family in memory of William Penn Worth and Caroline Hallowell Worth, houses offices for the college physicians and nurses, out-patient treatment facilities and rooms for students who require in-patient care. Registered nurses are on duty under the direction of the college physicians.

Each student is allowed ten days in-patient care in the Health Center per term without charge unless the services of a special nurse are required. After ten days, a charge of $5.00 per day is made. Students suffering from a communicable disease or from illness which makes it necessary for them to remain in bed must stay in the Health Center for the period of their illness. Ordinary medicines are furnished without cost, but a charge is made for special medicines, certain immunization

procedures and laboratory tests, and transportation when necessary to local hospitals.

The medical facilities of the college are available to students injured in athletic activities or otherwise, but the college cannot assume additional financial responsibility for medical and surgical expenses arising from accidents. Accident insurance coverage is, therefore, required for all students participating in athletics and is recommended for all others. (For details see page 27.)

The college psychiatric consultants hold office hours by appointment each week. The purpose of this service is to be of help with personal and emotional problems. The psychiatrists will provide as complete an evaluation of any student as possible. Brief psychotherapy within the limits of available time will be given to students without charge. In instances where longer treatment is needed, an outside psychiatrist will be recommended to the student.

*Student Advising*

The Associate Provost, the Deans, and their assistants hold the primary responsibility for advising all students. However, other advisors are also available.

Each freshman is assigned to a faculty member who acts as his course adviser until this responsibility falls to the chairman of the student's major department at the end of his sophomore year.

A consultant for testing and guidance, is available to assist students with special problems of academic adjustment, study skills and reading proficiency. In addition, aptitude and interest tests may be given on request.

Most dormitory areas have adult head residents or resident couples who are available to counsel students. Resident assistants, members of the junior or senior classes, are also assigned to each of the dormitory sections. In addition, a group of upperclass students is chosen to serve as counselors for freshmen, with several being assigned to each hall.

*Career Counseling and Placement*

The Office of Career Counseling and Placement provides assistance to students in considering how a given major may relate to future employment, choosing an occupation, and locating employment during the summers and upon graduation. Periodic conferences are planned and interviews are arranged with prospective employers. In addition, an Extern Program is offered through which students may observe at

first hand the business and professional activities of alumni who are working in fields related to students' potential career interests. This program takes place during the spring recess.

*Alumni Office*

The Alumni Office keeps records of the addresses of all living graduates and alumni of the college. It helps edit the Swarthmore alumni magazine, and acts as liaison for the college with all alumni and alumni groups, interpreting to them the present plans and policies of the college.

*Information Services Office*

The Information Services Office helps prepare several publications issued by the college known as Swarthmore College Bulletins. These include the alumni magazine, the President's Report, the Catalogue, and other miscellaneous issues. In addition to this, the Information Services Office, with the assistance of the largely student operated News Bureau, works with the press and other communications media in publicizing news that is of interest to the general public.

# STUDENT COMMUNITY

*Student Conduct*

The influence of the Society of Friends within the College community is one of the important factors in making Swarthmore what it is. Students who choose Swarthmore as their college should understand that they are accepting social and academic standards which, while subject to periodic review, are essential to the well-being of the community. In general, the life of students should be governed by good taste and accepted practice rather than elaborate rules. Certain regulations, however, are of particular importance and are listed below.

1. The possession and use of alcoholic beverages on the campus is regulated by State law and limited to those areas of the campus which are specified by Student Council and the Deans. The observance of moderation and decorum in respect to drink is a student obligation. Disorderly conduct is regarded as a serious offense.

2. The use or possession of injurious drugs or narcotics without the specific recommendation of a physician and knowledge of the Deans subjects a student to possible suspension or expulsion.

3. The use or possession of firearms or other dangerous weapons is not permitted. Firecrackers or other explosives are prohibited. Tampering with fire alarm or prevention equipment is a serious offense.

4. No undergraduate may maintain an automobile while enrolled at the College without the permission of the Car Authorization Committee, a student-faculty group. This permission is not extended to freshmen. Day students may use cars for commuting to College, but special arrangements for stickers must be made for campus parking. More detailed information may be obtained from the Office of the Deans.

5. The participation by any student in any disruption or inter-

ference with the orderly programs, functions, or conduct of College activities of any kind is a serious offense.

Penalties for violations of College regulations such as those listed above are set by judicial committees or the Deans and may involve suspension or expulsion. Standing regulations may be modified and new rules may be added at any time upon notice to the student body.

The College reserves the right to exclude at any time students whose conduct it regards as undesirable, and without assigning any further reason therefor. Neither the College nor any of its officers shall be under any liability whatsoever for such exclusion.

### *Student Council*

The semi-annually elected Student Council represents the entire undergraduate community and is the chief body of student government. Its efforts are directed toward coordination of student activities and the expression of student opinion.

Committees of the Council include the Budget Committee, which regulates distribution of funds to student groups; the Elections Committee, which supervises procedure in campus elections; and the Social Committee (see below). In addition to these, there are several joint Faculty-Student Committees, whose student membership is appointed by Council, which acts after consultation with the Deans.

### *Judicial Bodies*

Two committees have different jurisdictions. The *Student Judiciary Committee,* elected by the entire student body, acts on cases of alleged violations of students' rules and campus regulations except as they fall within the sphere of the College Judiciary Committee. Students may, however, request that their cases be considered by the Deans instead. The *College Judiciary Committee* is composed of student, faculty and administration members. It has primary jurisdiction over cases that may involve academic dishonesty. It also acts upon cases referred by or appealed from the Student Judiciary Committee or the Deans.

### *Social Committee*

An extensive program of social activities is managed by the Social Committee appointed by the Student Council. The program is designed to appeal to a wide variety of interests, and is open to all students. There is usually no charge for college social functions.

## EXTRA-CURRICULAR ACTIVITIES

In addition to the foregoing organizations, Swarthmore students have an opportunity to participate in a program of extra-curricular activities wide enough to meet every kind of interest. There are more than thirty-five organized activities, not including departmental clubs or political organizations. They vary as greatly as the interests of the students vary, from the Hockey Club to the Debate Club, from the Outing Club to co-ed dance groups. The College encourages a student to participate in whatever activity best fits his personal talents and inclinations, believing that saisfactory avocations are a necessary part of life.

### *The Studio Arts Program*

Instruction and facilities in Studio Arts are available on an extra-curricular basis as well as for credit in the academic program of the Art Department. See page 92 for a listing of credit and non-credit courses.

The Wilcox Gallery provides ten to twelve exhibitions a year, which are a direct complement to the program. The works of nationally known painters as well as those of younger artists are exhibited in group and one man shows.

### *The Marjorie Heilman Visiting Artist Program*

Each year a committee of students and faculty members selects an artist to be invited to spend a week at the College. The work of the invited artist is exhibited in the Wilcox Gallery, and he meets and talks with students on an informal basis.

### *Music*

The Department of Music administers and staffs several performing organizations. The College Chorus, directed by Professor Swing, rehearses three hours per week. (The College Singers, a select small chorus drawn from the membership of the Chorus, rehearses an additional one or two hours per week.) The College Orchestra, directed by Professor Freeman, rehearses twice per week: a two-hour rehearsal for full orchestra and a one-hour rehearsal for strings. Members of the orchestra, other instrumentalists and solo singers can participate in the chamber music coaching program directed by members of the department.

The Chorus and Orchestra give several public concerts per year at the College and elsewhere. Selected members of the chamber music coaching program give a public concert in the spring.

All three organizations require auditions for membership.

The Bond Concert Committee, a student organization working with the Department of Music, plans a series of informal Sunday afternoon concerts to accommodate students interested in preparing solo and chamber music performances. These concerts also provide an opportunity for student composers to have their compositions performed publicly.

There are facilities for private practice, and an excellent college record collection. The Cooper Foundation presents a distinguished group of concerts each year on the campus.

*Dance*

The Department of Physical Education for Women sponsors performance groups in Folk Dance and Modern Dance. Both groups meet regularly each week and give performances throughout the year. In addition, Mrs. Patricia Boyer offers a non-credit course in dance composition.

*Drama*

Professor Lee Devin is Director of the Theatre. He supervises the drama program, which includes some course work, workshops with guest directors, invited speakers, and a number of student-directed projects each semester. Interested students should consult the departmental statement in English Literature.

*Athletics*

Swarthmore's athletic policy is based on the premise that any intercollegiate program must be justified by the contribution which it can make to the educational development of the individual student who chooses to participate. In keeping with this fundamental policy, Swarthmore's athletic program is varied and extensive, offering every student a chance to take part in a wide range of sports. The College feels that it is desirable to have as many students as possible competing on its intercollegiate teams. Faculty members serve as advisers for many of the varsity athletic teams. They work closely with the team, attending practices and many of the scheduled contests.

*Swarthmore College Upward Bound*

The Upward Bound Program at Swarthmore College, begun in 1964 and continued with Federal support, is intended to provide simultaneously a valuable experience for Swarthmore students and a service to members of surrounding communities. It offers both a six-week residential summer school in which Swarthmore students serve as counselors and a series of activities during the academic year in which Swarthmore students serve as tutors. The program is administered by Edwin A. Collins, Project Director.

*Fraternities*

There are four fraternities at Swarthmore; Delta Upsilon and Phi Sigma Kappa are affiliated with national organizations while Tau Alpha Omicron and Phi Omicron Psi are local associations. Fraternities are adjuncts to the college social program and maintain separate lodges on the campus. The lodges do not contain dormitory accommodations or eating facilities. New members are pledged during the late fall of their first year at the college. In recent years about one quarter of the freshman men have decided to affiliate with one of the fraternities.

# IV

## EDUCATIONAL PROGRAM
## FACULTY REGULATIONS
## DEGREE REQUIREMENTS
## AWARDS AND PRIZES
## FELLOWSHIPS

*An Honors Seminar*

# EDUCATIONAL PROGRAM

## GENERAL STATEMENT

Swarthmore College offers the degree of Bachelor of Arts and the degree of Bachelor of Science. The latter is given only to students who major in Engineering; the former, to students in the Humanities, the Social Sciences, and the Natural Sciences.* Four years of resident study are normally required for a Bachelor's degree (see page 81), but variation in this term, particularly as a result of advanced placements, is possible (see page 65).

The selection of a program will depend upon the student's interests and vocational plans. The purpose of a liberal education, however, is not primarily to provide vocational instruction, even though it provides the best foundation for one's future vocation. Its purpose is to help students fulfill their responsibilities as citizens and grow into cultivated and versatile individuals. A liberal education is concerned with our cultural inheritance, with the cultivation of aesthetic, moral, and spiritual values, with the development of analytical abilities. Intellectually it aims to enhance resourcefulness, serious curiosity, open-mindedness, perspective, logical coherence, insight, discrimination.

The most recent comprehensive review of Swarthmore's curriculum (Critique of a College, 1967) suggested two principles for a contemporary liberal education. "One is the principle of Depth. To make the most of a liberal education, each student must go far enough into some subjects to give him a genuine mastery of disciplinary skills, so that he can use them to generate new discoveries on his own. . . . He must go far enough to grasp systematic connections within a field, to see how fundamental principles combine to make intelligible a range of subordinate principles or phenomena. . . . The other principle is that of Diversity. To make the most of a liberal education, each student must have enough breadth and variety in his studies so that

*For groupings of departments see page 235.

he can compare and contrast different methods of inquiry . . ., and so that he can have the experience of making the bright spark of connection leap across wide gaps. It is this breadth that gives point to the two senses of 'relevance' that are fundamental in liberal education . . . perception of the relevance of one part of learning to another, even across the boundaries of fields and subjects (and) . . . perception of the relevance of learning to the exigencies of life. . . ." To these two principles the study added two related observations: first, that no single, central, general body of material should, in the present state of knowledge, be required for study by all students; second, that the curriculum should aim to encourage resourcefulness and self-reliance and develop the personal conditions of intellectual progress by placing substantial responsibility upon the student himself for his education, amply allowing individuality of programs and requiring important choices about the composition of programs. "What we are proposing," the study concluded, "is a curriculum that leans rather sharply toward specialized diversity, and away from uniform generality . . . Our emphasis is on serious encounters with special topics and problems at a comparatively high level of competence, and on student programs that reflect individual constellations of diversified interests."

Accordingly, the Swarthmore curriculum requires of the student both a diversity of intellectual experience sufficient to test and develop different capacities and perspectives and concentration on some field(s) sufficiently intensive to develop a serious understanding of problems and methods and a sense of the conditions of mastery. These ends of a liberal education are reflected in requirements for distribution and for the major.

All students during the first half of their college program are expected to satisfy some if not all of the distribution requirements, to choose their major and minor subjects, and to prepare for advanced work in these subjects by taking certain prerequisites. The normal program consists of four courses each semester chosen by the student in consultation with his faculty advisor.

The program for upper class students affords a choice between two methods of study: Honors work and the Course program. Honors work is characteristically the more intensive, Course work the more diversified. An Honors student concentrates on two or three fields, his major and one or more minors, which he studies intensively and which occupy three-fourths of his working time during the last two years. At the close of his senior year he takes a series of six examinations given by visiting examiners over this work. In addition he takes

four courses, or the equivalent, which provide opportunities for further exploration outside of his Honors program.

A student in the Course program has a somewhat wider freedom of election and normally takes four courses or their equivalent in each of the last four semesters. Before the end of his senior year he is required to pass a comprehensive examination given by his major department. Students in the Course program are occasionally admitted to Honors Seminars when space is available; but work in small seminars and colloquia as well as independent work is part of the Course program.

The program for engineering students follows a similar basic plan, with certain variations which are explained on page 121. Courses outside the technical fields are distributed over all four years.

The course advisors of freshmen and sophomores are members of the faculty appointed by the Associate Provost. For juniors and seniors the advisors are the chairmen of their major departments or their representatives.

## PROGRAM FOR FRESHMEN AND SOPHOMORES

The curriculum of the first two years introduces a student to the content and methods of a variety of fields important to a liberal education. The College distribution requirements are designed to lead the student into serious work in several different, important, and broadly characteristic kinds of intellectual activity without insisting on a specific or narrow classification of knowledge and inquiry.

To meet these distribution requirements a student must take at least two courses in each of the four subject-matter groups listed below, elect work in at least six departments, and complete at least 20 courses outside the major before graduation. Three of the four distribution groups (those dealing with the natural sciences and engineering, literature and the arts, and the social and policy sciences) correspond generally to the College's grouping of academic departments in three divisions; a fourth group comprises subjects especially relevant to more than one division. Mathematics, though not included in the four groups, may be counted as one of the six departments in which work should be elected. Other courses which will not fulfill the distribution requirement (e.g. courses taught jointly by members of different departments, elementary language courses) may not be counted as one of the six departments. The distribution requirements are reviewed and revised from time to time by the Curriculum Com-

mittee and the Faculty as disciplinary and departmental perspectives change and in recognition of the pluralism of intellectual work.

The four groups for the distribution requirement at present are:

1. Astronomy, Biology, Chemistry, Engineering, Physics.
2. Art (courses in art history), Classics (literature courses numbered 11 or above), English Literature (except courses numbered 1 and 70 through 79), Modern Languages (literature courses numbered 11 or above), Music (except courses numbered 34-39).
3. Classics (courses in ancient history), History, Linguistics, Philosophy, Psychology, Religion.
4. Economics (except Economics 3, Accounting), Political Science, Sociology and Anthropology.

Courses taught jointly or alternately by faculty members of departments in different distribution groups may not be used to satisfy distribution requirements; and courses cross-listed between departments in two groups fulfill the distribution requirement only for the group in which the offering department belongs.

Students entering college with special preparation in any of the subjects included in the distribution requirements may apply to the Committee on Academic Requirements for exemption from that requirement, but secondary school courses of an advanced level do not usually provide grounds for such exemption.

It is most desirable that students include in their programs some work in a foreign language. A student who intends to major in one of the natural sciences, mathematics, or engineering should take an appropriate mathematics course in the freshman year. Students intending to major in one of the social sciences should be aware of the increasing importance of mathematical background for these subjects.

In addition to the requirements listed above, prerequisites must be completed for the work of the last two years in major and minor subjects, and sufficient additional electives must be taken to make up a full program, bearing in mind the requirement that at least 20 courses must be taken outside the major department.

It is expected that, after satisfying the requirements in the general program of the first two years, the student will devote the remainder of his sophomore year to courses which will prepare him for more advanced study of those subjects which have most interested him and to other courses which will increase the range of his knowledge. He should decide, as early in his sophomore year as possible, upon two or three subjects in which he might like to major and should consult

the statements of the departments concerned as to required and recommended courses and supporting subjects.

While faculty advisors assist the student in planning his program so as to develop his talents while meeting academic requirements, it is emphasized that students themselves are individually responsible for the planning of their programs. Faculty advisors, department chairmen, other faculty members, the Deans and the Associate Provost and Registrar are available for information and advice.

Physical education is required of all students (except veterans) in the first two years with certain provisions for exemption. The requirements are stated in full on page 79 and in the statements of the departments of Physical Education.

## COURSE PROGRAM FOR JUNIORS AND SENIORS

The work of juniors and seniors in the Course program includes some intensive, specialized study within a general area of interest. This comprises enough work in a single department (designated as a "major") to make an equivalent of at least eight courses before graduation. There is no upper limit to the number of courses a student may take in the major field, provided that he take at least twenty courses outside the major field. It has been the practice of the Committee on Academic Requirements to review cases in which this rule is alleged to create a special hardship. Before graduation the student must pass a comprehensive examination in his major subject.

A student must choose his major subject at the end of the sophomore year, and apply formally through the Registrar to be accepted by the division concerned. The decision will be based on an estimate of his ability in his major subject as well as on his record. If a student does not secure divisional approval, he cannot be admitted to the junior class.

With departmental permission it is possible for a student to plan a Special Major that includes closely-related work in one or more departments outside the major department. This work (up to four courses normally) is part of the major program for the comprehensive examination; some of it may consist of a thesis or other written research project(s) designed to integrate the work across departmental boundaries. In any case, the program of the Special Major is expected to be integral in the sense that it specifies a field of learning (not necessarily conventional) or topic or problem for sustained inquiry that crosses departmental boundaries and can be treated as a sub-field within the normal departmental major. Special Majors con-

sist of at least 10 credits and normally of no more than 12 credits. Occasionally, where regular departmental requirements unduly constrain the possibilities of a Special Major, these requirements may be relaxed to a minimum of six courses in the primary department or by the omission of certain courses in that department normally required for the sake of breadth of experience of the major field; but course requirements central to systematic understanding of the major field will not be waived. By extension, Special Majors may be formulated as joint majors between two departments, normally with at least five credits in each department and 11 in both departments, which, in such programs, collaborate in advising and in the comprehensive examination. Application for a Special Major need not be made as early as the spring of the Sophomore year; students may apply at any time up to the final semester in College, as their interests develop, to convert a regular major into a Special Major or vice versa.

A student's course advisor during his junior and senior years is the chairman of his major department (or a member of the department designated by the chairman) whose approval he must secure for his choice of courses each semester.

The faculty may award the bachelor's degree with Distinction to students who have done distinguished work in the Course program and have achieved the grade average established for this degree.

## HONORS PROGRAM FOR JUNIORS AND SENIORS

The Honors Program, initiated in 1922 by President Frank Aydelotte and modified most recently in 1968, is a distinctive part of Swarthmore's educational life. It seeks to free from the limitations of classroom routine those students whose maturity, commitment, and capacity suit them for independent work. While the program is designedly flexible and responsive to new needs, it has been characterized from the beginning by three basic elements, which taken together may be said to be the essence of the system.

(1) Honors work involves a concentration of the student's attention during his last two years upon a limited field of studies. He normally pursues only two subjects during a semester, thereby avoiding fragmentation of interest. The content of the subject matter field is correspondingly broader and deeper, permitting a wide range of reading and investigation and demanding of the student correlations of an independent and searching nature.

(2) Honors work frees the student from periodic examinations, since his thinking is under continual scrutiny by his classmates and

instructors. By this program he undertakes to prepare himself to take examinations in six subjects at the close of his senior year. In these he is expected to demonstrate his competence in a field of knowledge rather than simply his mastery of those facts and interpretations which his instructor has seen fit to present. These examinations, consisting of a three-hour paper in each field, are set by examiners from other institutions who read the papers and then come to the campus to conduct an oral examination of each student, in order to clarify and enlarge the basis of their judgment of his command of his material.

(3) Honors work is customarily carried on in seminars or small classes or in independent projects which may lead to an Honors paper or thesis. Seminars meet once a week, in many cases in the home of the instructor, for sessions lasting three hours or more. The exact technique of the seminar varies with the subject matter, but its essence is a cooperative search for truth, whether it be by papers, discussion, or laboratory experiment. Each student has an equal responsibility for the assimilation of the whole of the material and is correspondingly searching in his scrutiny of ideas presented by his fellows or by his instructor. The student is expected to devote half of his working time during a semester to each seminar or course taken in preparation for an Honors paper or examination. No student is permitted under ordinary circumstances to take more than six seminars. He may take fewer than six, since he may prepare in other ways for his Honors examinations.

In practice three avenues toward an Honors degree are open:

(1) The normal program of Honors work consists of six subjects studied during the last two years in preparation for papers *i.e.*, examinations, given by the visiting examiners at the close of the senior year. The usual pattern is four papers in the major department and two in a minor department, but other combinations of major and minor fields are possible. No student is allowed more than four papers in his major; in those cases where he offers three subjects in each of two fields, one of them is designated as his major. While there is a general belief that two papers in a minor field are desirable because of the mutual reinforcement they provide, there are by custom certain subjects which are allowed to stand alone. Thus there is a considerable flexibility in Honors programs, each being subject to the scrutiny of the departments and divisions in which the work is done.

(2) Students who have a special reason to study for one or two semesters abroad or in another American institution must take the

normal number of examinations. Such programs must be worked out in advance, since it may not be possible to provide special visiting examiners for work offered elsewhere and since instruction in some fields of the student's choice may not be available in the other institution. In general the student following this avenue to an Honors degree should weigh carefully the advantage of working independently or under tutorial guidance against the loss he incurs by missing both the stimulus and the criticism provided by his fellows in seminar.

(3) Students who at the end of the sophomore year did not elect or were not permitted to read for Honors, but whose work has subsequently shown distinction, may be encouraged to enter the Honors program as late as the middle of the senior year. They shall receive no remission of the number of examinations by reason of their preparation in Course but shall be subject to the regulations governing Honors programs of the division concerned. Such students must petition the division for permission to take the Honors examinations and must submit an acceptable list of examinations which they are prepared to take.

A candidate for admission to Honors should consult the chairmen of his prospective major and minor departments during the second semester of his sophomore year and work out a program for the junior and senior years. This proposed program must be filed in the office of the Registrar who will forward it to the divisions concerned. The acceptance of the candidate by the divisions depends in part upon the quality of his previous work as indicated by the grades he has received but mainly upon his apparent capacity for assuming the responsibility of Honors work. The major department is responsible for the original plan of work and for keeping in touch with the candidate's progress from semester to semester. The division is responsible for approval of the original program and of any later changes in that program.

At the end of the junior year Honors students are required to take the Honors examinations set at that time for the fields they have studied. These trial papers are read, however, by their instructors, not by the visiting examiners. On the basis of the showing made in these examinations, the student may be advised or required to drop out of Honors, or he may be warned that he continues in Honors at his own risk. Those students who move to the Course program under these circumstances or for other reasons will receive grades for the work they have done while reading for Honors, but in no case without taking examinations over the field covered.

At the end of the senior year the reading of the examinations and the decision of the degree of Honors to be awarded the candidates is entirely in the hands of the visiting examiners. Upon their recommendation, successful candidates are awarded the Bachelor's Degree with Honors, with High Honors, or with Highest Honors. When the work of a candidate does not in the opinion of the examiners merit Honors of any grade, his papers are returned to his instructors, who decide, under rules of the Faculty, whether he shall be given a degree in Course.

## EXCEPTIONS TO THE FOUR YEAR PROGRAM

Although the normal period of uninterrupted work toward the Bachelor of Arts and Bachelor of Science degrees is four years, graduation in three years is freely permitted when a student can take advantage of Advanced Placement credits, perhaps combining them with extra work by special permission. When personal circumstances warrant a student may lengthen the continuous route to graduation to five years by carrying fewer courses than the norm of four during some or all of his college career: this may occasionally be appropriate for students who enter Swarthmore lacking some elements of the usual preparation for college or who, for other reasons, wish to free time for activities relating to their curricular work although not done for academic credit. Such five-year programs are possible in Music and Studio Arts for students who are taking some instruction off campus or who wish to pursue studio or instrumental work without full credit but with instruction and critical supervision; but such programs in the arts are possible only on application to and selection by the department concerned based on exceptional accomplishment or promise. In all cases where it is proposed to reduce academic credit and lengthen the period before graduation the College looks particularly to personal circumstances and to careful advising and necessarily charges the regular annual tuition (see the provisions for overloads, p. 27). Full-time leaves of absence for a semester or a year or more are freely permitted and in some cases encouraged, subject also to careful planning and academic advising.

## NORMAL COURSE LOAD

Although normal progress toward the degree of Bachelor of Arts or Bachelor of Science is made by eight semesters' work of four courses or the equivalent each semester, students may and frequently do vary

this by programs of five courses or three courses if it is desirable for them to do so. The object of progress toward the degree is not primarily the accumulation of 32 credits, however, and it is not College policy to permit programs of fewer than three courses. Programs of more than five courses or fewer than four courses require special permission (see p. 27 on tuition and p. 78 on registration).

## FORMATS OF INSTRUCTION

While classes and seminars are the normal curricular formats at Swarthmore, faculty regulations encourage other modes as well. These include various forms of individual study, student-run courses, and a limited amount of "practical" or off-campus work. The rationale and details of these methods are set out in *Critique of a College* (1967).

The principal forms of individual work are attachments, directed reading, and tutorials. The faculty regulation on attachments provides that a student may attach to an existing course, with permission of the instructor, a project of additional reading, research, and writing. If this attachment is taken concurrently with the course it is normally done for half credit. If it is taken in a later semester (preferably the semester immediately following) it may be done for either half or full credit. This kind of work can be done on either a small-group or individual basis. It is not possible in all courses, but it is in most, including some introductory courses. For freshmen and sophomores it is a way of developing capacities for independent work, and for Honors students it is an alternative to seminars as a preparation for papers; but all students are encouraged to consider it as a way of achieving greater concentration on certain subjects and varying the standard credit formula. Students who decide before the middle of the semester to do a half-credit attachment may commonly, with permission, drop a regular course and carry three and a half credits in that term to be balanced by four and a half credits in another term. Students may do as many as two attachments each year.

Directed reading and tutorials are similar; but the faculty role in the former is more bibliographical than pedagogical, and, because they require somewhat less faculty time, opportunities for directed reading are more frequent in most departments than are opportunities for tutorials. In both cases substantial written work and/or written examinations are considered appropriate, and it is generally desirable that the work be more specialized or more sharply focussed than is usually the case in courses or seminars; the work may range from a course of reading to a specific research project. Such work is available primarily

to juniors and seniors in accordance with their curricular interests and as faculty time permits.

The faculty regulation on student-run courses permits "a group of students to propose a topic to an instructor for half or single credit and to run their own course with a reading list approved by the instructor and a final examination or equivalent administered by him, but normally with no further involvement of faculty." In organizing such a course students obtain provisional approval and agreement to serve as course supervisor from a faculty member by December 1st (for the spring term) or May 1st (for the fall term) on the basis of an initial memorandum emphasizing the principal subject matter to be studied, the questions to be asked about it, the methods of investigation, and providing a preliminary bibliography. The course is then registered by its organizers with the Provost, who has administrative supervision of such work, and who may waive the foregoing deadlines to recognize problems in the organization of such courses. The course supervisor consults his department and any other departments concerned (and the Curriculum Committee in the case of an interdepartmental course). He also reviews the course outline and bibliography and qualifications and general eligibility of students proposing to participate in the course. On departmental (or Curriculum Committee) approval the course supervisor's final approval is due ten days before the term begins, following which a revised reading list and class list are given to the Librarian and the course title and class list are filed with the Registrar. At the end of the course the supervisor evaluates and grades the students' work or arranges for an outside examiner to do so.

Student-run courses may vary in format and content. In particular, they may be provisionally proposed for half credit to run in the first half of the semester, and, at mid-term, may be either concluded or, if the participants and course supervisor find the work profitable, continued for the balance of the term for full credit. Alternatively, student-run courses may be started after the beginning of the semester (up to mid-semester) for half credit and then be continued, on the same basis, into the following term. Or they may be taken for half credit over a full term. The role of the course supervisor may exceed that in planning and evaluation outlined above and extend to occasional or regular participation. The only essentials, and the purpose of the procedures, are sufficient planning and organization of the course to facilitate focus and penetration. The course planning and organization, both analytical and bibliographical, are also regarded

as important ends in themselves, to be emphasized in the review of proposals before approval. Up to four of the 32 credits required for graduation may be taken in student-run courses.

Finally, as to applied or practical work, the College may under faculty regulations grant up to one course credit for practical work, which may be done off campus, when it can be shown to lend itself to intellectual analysis and is likely to contribute to a student's progress in regular course work, and subject to four conditions: (1) agreement of an instructor to supervise the project; (2) permission of the Curriculum Committee obtained before the applied or practical work is undertaken; (3) a basis for the project in some prior course work; and (4) normally, the examination of pertinent literature and production of a written report as parts of the project. This option is intended to apply to work in which direct experience of the off-campus world or responsible applications of academic learning or imaginative aspects of the practice of an art are the primary elements. Because such work is likely to bear a loose relation to organized instruction and the regular curriculum the College limits academic credit for it while recognizing its special importance for some students' programs.

## INTERDISCIPLINARY WORK

The requirements of the major typically leave room for significant flexibility in students' programs, both within and outside the major. This may be used to pursue a variety of interests and to emphasize intellectual diversity; it may also be used for the practical integration of individual programs around interests or principles supplementing the major. Except for International Relations, Mediaeval Studies, Literature, and the Linguistics-Psychology major, the College does not offer inter-departmental majors or, except for Black Studies, formal interdisciplinary programs short of the major. The programs in Education and in Linguistics have departmental status as to staff, although students do not major in them. It should be recognized that some departments are themselves rather interdisciplinary in nature; that a considerable number of courses are cross-listed between departments; that each year some courses are taught jointly by members of two or more departments; that departments commonly recommend or require supporting work for their major in other departments; and that students can organize their work into personally selected concentrations in addition to or as extensions of their majors, particularly in Special Majors. One such concentration is formally provided in

the Black Studies program (see page 101). Many other opportunities exist informally—e.g., in comparative literature, in African studies, in American studies, in Religion and Sociology-Anthropology, in Engineering and Social Sciences, or in Biology and Chemistry. Students are encouraged to seek the advice of faculty members on such possibilities with respect to their particular interests. In some cases faculty members of several departments have planned and scheduled their course offerings with some consultation so as to afford a de facto concentration in addition to the major, and students may wish to know and take advantage of these cases of overlapping faculty interests. The following listings, which may be expected to change from year to year, reflect currently organized opportunities, although some other possibilities are mentioned with the listings of departmental programs later in the catalogue.

## ASIAN STUDIES

Students who wish to undertake work at Swarthmore in Asian studies should be aware of the course and seminar offerings pertaining to Asia in a number of departments. The opportunity exists to develop coordinated programs of study of an interdisciplinary nature drawing on Asian materials, in conjunction with a standard department major. Students who wish to explore these possibilities are invited to discuss the matter with Mr. Piker (Sociology-Anthropology), Mr. Swearer (Religion), or Mr. Lieberthal (Political Science).

Courses and seminars dealing primarily or exclusively with Asian materials:

*Department of Art*

51. Far Eastern Art (Mr. Rhys)

*Department of History*

9. Chinese Civilization (Miss Li)
44. Modern China(Miss Li)
45. Modern Japan (Miss Li)
47. Topics in East Asian History (Miss Li)
48. Topics on Modern China (Miss Li and Mr. Lieberthal) (Cross-Listed as Political Science 48)
144. Modern East Asia (Miss Li)

*Department of Political Science*

19. Comparative Communist Politics (Mr. Lieberthal)
20. Politics of China (Mr. Lieberthal)

48. Topics on Modern China (Miss Li and Mr. Lieberthal) (Cross-listed as History 48)
107. Comparative Communist Politics (Mr. Lieberthal)

*Department of Religion*

6. Patterns of Asian Religions (Mr. Swearer)
24. Hinduism and Indian Culture (Miss Robinson)
25. Buddhism, the Quest for Nirvana (Mr. Swearer)
26. Indian Religious Texts (Mr. Swearer)
27. Religion in Central and East Asia (Mr. Swearer)
35. South Asian Civilization (Miss Robinson and Mr. Brow) (Cross-listed as Sociology-Anthropology 35)
108. Devotional Religion in India: Hinduism and Islam (Miss Robinson)
109. Religion in Southeast Asia (Mr. Swearer)
111. Types of Religious Philosophy in Asia (Miss Robinson and Mr. Swearer)

*Department of Sociology and Anthropology*

35. South Asian Civilization (Miss Robinson and Mr. Brow) (Cross-listed as Religion 35)
41. Theravada Buddhism: A Social History (Mr. Piker)

Courses and seminars which include Asian materials:

*Department of Economics*

11. Economic Development (Mr. Ooms)
70. The Political Economy of Communist Systems (Mr. Lieberthal and Mr. Pryor) (Cross-listed as Political Science 70)
109. Economic Development (Mr. Ooms)

*Department of History*

43. Expansion of Europe (Mr. Wright)

*Department of Political Science*

3. Comparative Politics (staff)
70. The Political Economy of Communist Systems (Mr. Lieberthal and Mr. Pryor) (Cross-listed as Economics 70)
109. Political Development (Mr. Jalloh)

*Department of Religion*

7. Primitive Religions (Miss Robinson)
28. Mysticism East and West (Mr. Swearer)
30. Myth and Ritual (Miss Robinson)
44. Asian Religions in America (Mr. Swearer)
45. Monasticism East and West (Mr. Henry and Mr. Swearer)

110. Cult and Symbol: Goddess Cults (Miss Robinson)

*Department of Sociology and Anthropology*

23. Myth, Ritual and Social Structure (Mr. Brow)
64. Economic Anthropology (Mr. Brow.)
101. Economic Anthropology (Mr. Brow)
102. Myth, Ritual and Social Structure (Mr. Brow)
107. Sociology of Religion (Mr. Piker)

## PUBLIC POLICY ANALYSIS AND EVALUATION

Course work in this program uses methods of description, analysis, and evaluation from economics, engineering, mathematics and statistics, political science, sociology, and other disciplines. The program focuses on substantive fields of policy in such aspects as the identification and definition of a problem; recognition of systematic or casual factors in its context; methods of analysis; objectives; feasibility of proposed solutions; and equity, effectiveness, and efficiency of solutions. Problems for consideration are drawn mainly from three areas of public policy; the urban complex; health, welfare, and education; and the environment. The role of administrative organization and of governmental bodies at the local, state, and federal levels is included as a subject of analysis, as is the normative issue of social, legal, and political theory. Interested students should consult Professor Gilbert (Political Science).

## HEALTH SCIENCE ADVISING PROGRAM

The function of the health science advising program is twofold: to advise students interested in a career in the health sciences, and to prepare a letter of recommendation for professional schools to which the student may apply. The letter is based on faculty evaluation forms the student submits to faculty members, the student's academic record, and nonacademic activities.

Students intending to enter a career in the health sciences, especially those applying to medical or dental schools, should plan their academic programs carefully to meet the necessary requirements, as well as the general College requirements. The following courses are among the *minimum* requirements for students entering medical or dental schools: Biology 1, 2; Chemistry 1, 2 or 11, 12; Chemistry 28, 29; Physics 1, 2, or 3, 4; Math 3, 4 or 5, 6; and English Literature, 2 semester courses. Some schools have foreign language requirements. In addition to the minimal requirements, many medical

schools recommend the following courses: Cell Biology, Developmental Biology, and Genetics. However, the student should bear in mind that requirements change and should remain in touch with those professional schools in which he or she is interested. The work of the junior and senior years may be completed in either the Course or the Honors Program, and in any major department of the student's choice. However, professional schools in the health sciences generally require a demonstrated proficiency in the basic sciences.

Basic information on the specific requirements of the various medical and dental schools can be found in the following publications, which are available in the college bookstore or the office of the Health Science Advisor:

*Medical School Admission Requirements*
*Admission Requirements of American Dental Schools*

The Health Science Advisor, Douglas C. Thompson, meets regularly with the freshmen, sophomores, juniors, and seniors interested in medicine. Further information on requirements and opportunities can be obtained from the Health Science Advisor, but it is important to remember that it is the student's responsibility to make his intentions known to the advisor at the earliest possible date.

Swarthmore College participates in two experimental early decision programs with the Bowman Gray School of Medicine of Wake Forest University and The Cornell University Medical College. Each year a small number of highly qualified sophomores are selected and offered a place in one of these medical schools upon completion of their four years of undergraduate education at Swarthmore. These students are selected jointly by the Swarthmore Health Science Advisory committee and the Admission Committees of the medical schools. Early acceptance permits a student to experiment with his curriculum during his last two years, and to take both more demanding and more diverse courses than he might choose with the difficult problem of medical school admission still unresolved.

## CREATIVE ARTS

Work in the creative arts is available both in the curriculum of certain departments and on an extra-curricular basis. Interested students should consult the departmental statements in Art, English Literature, and Music. A total of not more than four courses in the creative arts may be counted toward the degree of Bachelor of Arts.

## COOPERATION WITH NEIGHBORING INSTITUTIONS

With the approval of their faculty advisor and the Associate Provost, students may take courses offered by Bryn Mawr or Haverford College or the University of Pennsylvania without the payment of extra tuition. This arrangement does not apply to the summer session of the University of Pennsylvania.

Advanced students in the physical sciences and engineering may benefit from the Bartol Research Foundation, located on the campus, which offers a graduate program. (See page 13.)

## STUDENT EXCHANGE PROGRAMS

To provide variety and a broadened outlook for interested students, the College has student exchange arrangements with Middlebury College, Pomona College, Rice University, and Tufts University. Selection is made by a committee of the home institution from among applicants who will be sophomores or juniors at the time of the exchange. With each institution there is a limited and matched number of exchangees. Students settle financially with the home institution, thus retaining during the exchange any financial aid for which they are eligible. Exchange arrangements do not permit transfer of participants to the institution with which the exchange takes place.

## EDUCATION ABROAD

The College recognizes the general educational value of travel and study abroad and cooperates as far as possible in enabling interested students to take advantage of such opportunities. It distinguishes, however, between those foreign study plans which may be taken for credit as part of a Swarthmore educational program, and those which must be regarded as supplementary. To be acceptable for credit, foreign study must meet Swarthmore academic standards, and must form a coherent part of the student's four-year plan of study. The Honors Program in particular demands a concentration of study which is not easily adapted to the very different educational systems of foreign universities. Therefore, while some of the approved programs listed below may normally be taken as substitutes for a semester or a year of work at Swarthmore, each case is judged individually, and the College may withhold its approval of a particular program, or may insist that the program be carried out as an extra college year.

## EDUCATIONAL PROGRAM

Plans for study abroad must be approved in advance by the Associate Provost and Registrar and by the chairmen of departments concerned, if credit is to be given for courses taken, and students may be asked to take examinations upon their return to the College.

1. *The Swarthmore Program in Grenoble, France,* inaugurated in the fall of 1972. Students entering this program spend either one or two semesters at the University of Grenoble, where their course of study is the equivalent of one or two semesters at Swarthmore. This program, under the auspices of the Department of Modern Languages, is open to students from any department, but especially those in the humanities and social sciences. Should there be places available, students from other neighboring institutions will be accepted. The number of participants is limited to twenty.

Students are integrated into the academic life at the University of Grenoble through regular courses when their language competence allows or through special courses for foreign students. Individual programs are arranged to suit the needs and competencies of students, and the preparation of Honors papers is possible in certain fields. The program is designed primarily for juniors and second semester sophomores, but in special cases a few seniors can be accommodated.

A Swarthmore College faculty member acts as resident Director. The Director supervises the academic program and the living arrangements of the students, and advises on all educational or personal problems. There is also a co-ordinator of the program at Swarthmore who handles such matters as admissions (in consultation with the Deans), financial aid, negotiations with departments within the College and with neighboring institutions whose students are in the program. Applications for the fall semester must be submitted by March 15 and for the spring semester by November 15.

2. *Other Established Programs.* Students who wish to study abroad under formal academic conditions but whose needs would *not* be met by the Swarthmore program in Grenoble may apply to one of the programs administered by other American colleges and universities; for example, those of Hamilton College, Smith College, or Sweet Briar College. These are full-year programs of study at foreign universities, under the supervision of American college personnel. Interested students should consult the Associate Provost.

3. *Black Studies Exchange Program.* As part of the Program in Black Studies (see p. 101) an exchange program has been arranged

with the University of the West Indies. The program is available to a limited number of participants.

4. *Direct Enrollment.* Application may also be made directly to foreign institutions for admission as a special student. This should be done only after consultation with the Associate Provost and the appropriate department head, and care must be taken to assure in advance that courses taken abroad will be acceptable for Swarthmore credit. Most foreign universities severely limit the number of students they accept for short periods, however, and anyone who applies for admission directly must be prepared to be refused.

5. *University of Keele.* For a number of years Swarthmore College and the University of Keele, Staffordshire, England, have had a student exchange each year. A student from Swarthmore is selected for study at Keele by a committee which interviews the applicants. The year at Keele may take the place of the junior year at Swarthmore, though it is often taken as an extra year.

6. *Peaslee Scholarships.* These scholarships, the gift of Amos Peaslee (Class of '07), were instituted in 1953 and are normally awarded each year, preferably to sophomores and juniors, for language study abroad. The scholarships are for a minimum of one semester plus a summer; course credit is given for the work done upon approval of the department concerned.

7. *Intercollegiate Center for Classical Studies, Rome.* See announcement of Classics Department, p. 107.

# FACULTY REGULATIONS

## ATTENDANCE AT CLASSES

Registration to take a course for credit implies regular attendance at classes, unless a student specifically elects to obtain credit in a course without attending classes. The conditions for exercising this option are set forth below. With this exception, students are responsible for regular attendance. Faculty members will report to the Deans the name of any student whose repeated absence is in their opinion impairing the student's work. The number of cuts allowed in a given course is not specified, a fact which places a heavy responsibility on all students to make sure that their work is not suffering as a result of absences. Since freshmen must exercise particular care in this respect, and since the Faculty recognizes its greater responsibility toward freshmen in the matter of class attendance, it is expected that freshmen, especially, will attend *all* classes.

When illness necessitates absence from classes, the student should report at once to the nurses or to the college physician.

A student may obtain credit for a course without attending class meetings by reading the material prescribed by a syllabus and taking a final examination, under the following conditions:

1) The student must signify his intent to do so at the time of registration, having obtained the instructor's approval in advance.

2) If after such registration the student wishes to change his status and attend classes normally, he must again obtain the instructor's approval.

3) The student may be required to perform such work, in addition to the final examination, as the instructor deems necessary for adequate evaluation of his performance.

4) The final grade will be recorded by the Registrar exactly as if the student had attended classes normally.

## GRADES

Instructors report to the Associate Provost and Registrar's office at intervals during the year upon the work of students in courses. Informal reports during the semester take the form of comments on unsatisfactory work. At the end of each semester formal grades are given in each course under the letter system, by which *A* means excellent work, *B* good work, *C* satisfactory work, *D* passing but below the average required for graduation, and *NC* (no credit) for uncompleted or unsatisfactory work. Letter grades are qualified by pluses and minuses. *W* signifies that the student has been permitted to withdraw from the course by the Committee on Academic Requirements. *X* designates a condition; this means that a student has done unsatisfactory work in the first half of a year course, but by creditable work during the second half may earn a passing grade for the full course and thereby remove his condition. *R* is used to designate an auditor or to indicate cases in which the work of a foreign student cannot be evaluated because of deficiencies in English.

*Inc.* means that a student's work is incomplete with respect to specific assignments or examinations. The Faculty has voted that a student's final grade in a course should incorporate a zero for any part of the course not completed by the date of the final examination, or the end of the examination period. However, if circumstances beyond the student's control preclude the completion of all work by this date, a grade of *Incomplete* (*Inc.*) may be assigned with the permission of the Registrar. In such cases incomplete work must normally be made up and graded and the final grade recorded within five weeks after the start of the following term. Except by special permission of the Registrar (on consultation with the Committee on Academic Requirements) all grades of *Inc.* still outstanding after that date will be replaced on the student's permanent record by NC (no credit). Waiver of this provision by special permission shall in no case extend beyond one year from the time the *Inc.* grade was incurred.

The only grades recorded on students' records for courses taken during their first semester of the freshman year are *CR* (credit) and *NC* (no credit). In the balance of their work at Swarthmore, students may select up to four courses for Credit/No Credit by informing the Registrar's Office at registration time or within the first two weeks of the term in which the course is taken. For freshmen and sophomores credit will be recorded for work that would earn a grade of D or higher; for juniors and seniors the minimum equivalent letter grade for credit will be C. Instructors are asked to provide

the student and his faculty advisor with evaluation of the student's Credit/No Credit work. The evaluation may be either a letter-grade equivalent, or a comment. Such evaluations are not a part of the student's grade record.

Reports of grades are sent to students at the end of each semester. They are not routinely sent to parents or guardians, but such information may be released at the discretion of the Deans or Associate Provost when parents request it.

A *C* average is required in the courses counted for graduation.

## REGISTRATION

All students are required to register at the time specified in official announcements and to file programs of courses or seminars approved by their course advisors. Fines are imposed for late or incomplete registration.

A regular student is expected to take the prescribed number of courses in each semester. If more than five or fewer than four courses seem desirable, he should consult his course advisor and file a petition with the Committee on Academic Requirements.

Applications involving the late entrance into a course must be received within the first two weeks of the semester. Applications involving withdrawal from a course must be received not later than the middle of the semester.

A deposit of $50 is required of all returning students prior to their registration, during the spring semester, for the semester which begins the following fall. This deposit is applied to charges for that fall semester, and will be refunded if the student withdraws from College prior to July 15.

## STUDENT LEAVES OF ABSENCE

Student leaves of absence are freely permitted provided the request for leave is received by the date of registration and the student is in good standing. If a student has not registered and has not arranged for a leave of absence for the subsequent semester, it is assumed that he or she is withdrawing. Such students must apply to the Deans for re-admission in order to return to College after an interval. The purpose of this policy is to assist the College in planning its enrollments.

## EXAMINATIONS

Any student who is absent from an examination, announcement of which was made in advance, shall be given an examination at another

hour only by special arrangement with the instructor in charge of the course.

No examination *in absentia* shall be permitted. This rule shall be interpreted to mean that instructors shall give examinations only at the College and under direct departmental supervision.

## SUMMER SCHOOL WORK

Students desiring to receive Swarthmore College credit for work at a summer school are required to obtain the approval of the chairman of the Swarthmore department concerned before doing the work. Prior approval is not automatic: it depends upon adequate information about the content and instruction of the work to be undertaken. Validation of the work for credit depends upon evaluation of the materials of the course including syllabus, reading lists, written papers, and examinations, by the Swarthmore department concerned after the work has been done. Validation may include an examination, written or oral, administered at Swarthmore. An official transcript from the summer school must be presented to the Office of the Registrar before the work can be validated for credit. One course credit at Swarthmore is regarded as equivalent to 4 semester hours.

## PHYSICAL EDUCATION

Physical education is required of all women and non-veteran men in the freshman and sophomore years, unless an excuse is granted by the college physician. Three periods per week are normally required, but exemption is possible after any quarter (half-semester) provided that certain minimum requirements are met. (See the departmental statements of the departments of Physical Education for Men and Women.) Students who have not fulfilled their Physical Education requirement will not be allowed to enter their senior year.

## ACADEMIC HONESTY

Members of an academic community have an unequivocal responsibility to present as the result of their own work only that which is truly theirs. Cheating, whether in examinations or by plagiarizing the work of others, is a most serious offense, and one which strikes at the foundations of academic life.

The responsibility of the Faculty in this area is three-fold: to explain the nature of the problem to those they teach, to minimize

temptation and to report any case of cheating to the Deans for action by the College Judiciary Committee.

The College Judiciary Committee will consider the case, determine guilt, and recommend a penalty to the President. The order of magnitude of the penalty should reflect the seriousness of the transgression. It is the opinion of the Faculty that for the first offense failure in the course and, as appropriate, suspension for a semester or deprivation of the degree in that year is not unsuitable; for a second offense the penalty should normally be expulsion.

## EXCLUSION FROM COLLEGE

The College reserves the right to exclude at any time students whose academic standing it regards as unsatisfactory, and without assigning any further reason therefor; and neither the College nor any of its officers shall be under any liability whatsoever for such exclusion.

# DEGREE REQUIREMENTS

## BACHELOR OF ARTS AND BACHELOR OF SCIENCE

The degree of Bachelor of Arts or Bachelor of Science is conferred upon students who have met the following requirements for graduation. The candidate must have:

1. Completed thirty-two courses or their equivalent.

2. An average grade of *C* on the courses counted for graduation.

3. Complied with the distribution requirements and have completed at least twenty courses outside his or her major. (See page 59.)

4. Met the requirements in the major and supporting fields during the last two years.

5. Passed satisfactorily the comprehensive examinations in his or her major field, or met the standards set by visiting examiners for a degree with Honors.

6. Completed four semesters of study at Swarthmore College, two of which have been those of the senior year.

7. Completed the physical education requirement set forth on page 79 and in statements of the Physical Education Departments.

8. Paid all outstanding bills and returned all equipment and library books.

## MASTER OF ARTS AND MASTER OF SCIENCE

The degree of Master of Arts or Master of Science may be conferred subject to the following requirements:

Only students who have completed the work for the Bachelor's degree with some distinction, either at Swarthmore or at another institution of satisfactory standing, shall be admitted as candidates for the Master's degree at Swarthmore.

The candidate's record and a detailed program setting forth the aim of the work to be pursued shall be submitted, with a recommendation from the department or departments concerned, to the Committee on the Master's Degree. If accepted by the Committee, the candidate's name shall be reported to the faculty at or before the first faculty meeting of the year in which the candidate is to begin his work.

## DEGREE REQUIREMENTS

The requirements for the Master's degree shall include the equivalent of a full year's work of graduate character. This work may be done in courses, seminars, reading courses, regular conferences with members of the faculty, or research. The work may be done in one department or in two related departments.

A candidate for the Master's degree shall be required to pass an examination conducted by the department or departments in which his work was done. He shall be examined by outside examiners, provided that where this procedure is not practicable, exceptions may be made by the Committee on the Master's Degree. The department or departments concerned, on the basis of the reports of the outside examiners, together with the reports of the student's resident instructors, shall make recommendations to the faculty for the award of the degree.

At the option of the department or departments concerned, a thesis may be required as part of the work for the degree.

A candidate for the Master's degree will be expected to show before admission to candidacy a competence in those languages deemed by his department or departments most essential for his field of research. Detailed language requirements will be indicated in the announcements of departments which admit candidates for the degree.

The tuition fee for graduate students who are candidates for the Master's degree is $2,870 per year, and the general fee for these students is $25 per semester.

## ADVANCED ENGINEERING DEGREES

The advanced degrees of Mechanical Engineer (M.E.), Electrical Engineer (E.E.), and Civil Engineer (C.E.), may be obtained by graduates who have received their Bachelor's degree in Engineering upon fulfilling the requirements given below:

1. The candidate must have been engaged in engineering work for five years since receiving his first degree.

2. He must have charge of engineering work and must be in a position of responsibility and trust at the time of application.

3. He must make application and submit an outline of the thesis he expects to present, one full year before the advanced degree is to be conferred.

4. The thesis must be submitted for approval one calendar month before the time of granting the degree.

5. Every candidate shall pay a registration fee of $5 and an additional fee of $20 when the degree is conferred.

# AWARDS AND PRIZES

The *Ivy Award Fund* was created by a gift from Owen Moon, '94. The income of the fund is placed in the hands of the faculty for award on Commencement Day to a male member of the graduating class. The qualifications for the Ivy Award are similar to those for the Rhodes Scholarships and include (*a*) qualities of manhood, force of character, and leadership; (*b*) literary and scholastic ability and attainments. These have been phrased by the donor in the words "leadership based upon character and scholarship."

The *Oak Leaf Award* was established by David Dwight Rowlands of the Class of 1909. It was later permanently endowed in memory of him by Hazel C. Rowlands, '07, and Caroline A. Lukens, '98. The award is made by the faculty each year to the woman member of the Senior Class who is outstanding for loyalty, scholarship and service.

*The Flack Achievement Award,* presented by the Flack Foundation, one of whose founders is Hertha Eisenmenger Flack of the Class of 1938, is to be made to a deserving student who, during the first two years at Swarthmore College, has demonstrated a good record of achievements in both academic and extracurricular activities while showing leadership potential as a constructive member of the College. The donor hopes these awards will go to students of demonstrated achievement and high potential and who are dedicated to the basic principles of American democracy and of academic freedom. The awards are not related to need.

*The Scott Award at Swarthmore.* A scholarship established by the Scott Paper Co. of Chester, Pa., in honor of its former president, Arthur Hoyt Scott of the Class of 1895. Given for the first time in 1953, it is awarded annually to an outstanding sophomore who plans to enter business after graduation and who demonstrates the qualities of scholarship, character, personality, leadership, and physical vigor. The award provides the recipient with $2,000 for each of his last two years in college, regardless of financial need.

The *McCabe Engineering Award,* founded by Thomas B. McCabe, 1915, is to be presented each year to the outstanding engineering student in the Senior Class. The recipient is chosen by a committee of the faculty of the department of Engineering.

The *Phi Beta Kappa Prize* is awarded by the Swarthmore Chapter to the member of the junior class who had the best academic record for the first two years. The value of the prize is $40.

The *Brand Blanshard Prize,* honoring Brand Blanshard, professor of philosophy at Swarthmore from 1925 to 1945, has been established by David H. Scull, of the Class of 1936. The award of $100 is presented annually to the student who, in the opinion of the department, submits the best essay on any philosophical topic.

The *A. Edward Newton Library Prize* of $50, endowed by A. Edward Newton, to make permanent the Library Prize first established by W. W. Thayer, is awarded annually to that undergraduate who, in the opinion of the Committee of Award, shows the best and most intelligently chosen collection of books upon any subject. Particular emphasis is laid in the award not merely upon the size of the collection but also upon the skill with which the books are selected and upon the owner's knowledge of their subject-matter.

The *Katherine B. Sicard Prize* of $5, endowed by the Delta Gamma Fraternity in memory of Katherine B. Sicard, '34, is awarded annually to the freshman woman who, in the opinion of the department, shows greatest proficiency in English.

*The William Plumer Potter Public Speaking Fund,* established in 1927, in addition to providing funds for the collection of recorded literature described on page 15, sponsors awards for the best student short stories, and is a major source of funds for campus appearances by poets and writers.

*The Ella Frances Bunting Extemporary Speaking Fund* and the *Owen Moon Fund* provide income for a poetry reading contest as well as funds for visiting poets and writers.

The *Lois Morrell Poetry Award,* given by her parents in memory of Lois Morrell of the Class of 1946, goes to that student who, in the opinion of the faculty, submits the best original poem in the annual competition for the award. The award, consisting of $100, is made in the spring of the year. All entries should be submitted by April 1.

The *John Russell Hayes Poetry Prizes,* of approximately $25 for a first prize and $15 for a second prize, are offered for the best original poem or for a translation from any language. Manuscripts should be ready by April 1 of each year.

The *Academy of American Poets* has established at Swarthmore College one of its five-year award programs. The Academy gives $100 each year for the prize poem (or group of poems) submitted in a competition under the direction of the Department of English Literature. The program was initiated in 1967.

The *May E. Parry Memorial Award,* given by the Class of 1925 of which she was a member, is presented each year to the senior woman who by her loyalty, sportsmanship, and skill in athletics has made a valuable contribution to Swarthmore College. The recipient is chosen by the faculty of the Department of Physical Education for Women.

The *Jesse H. Holmes Prize in Religion* of $50, donated by Eleanor S. Clarke of the Class of 1918 and named in honor of Jesse Holmes, Professor of History of Religion and Philosophy at Swarthmore from 1899 to 1934, is awarded to the student who, in the opinion of the Department of Religion, submits the best essay on any topic in the field of religion.

## FELLOWSHIPS

Three fellowships are awarded annually by the faculty, on recommendation of the Committee on Fellowships, to seniors or graduates of the College for the pursuit of advanced work. The proposed program of study must have the approval of the faculty. Applications for fellowships must be in the hands of the committee by April 15. Applicants for any one of these fellowships will be considered for the others as well.

These three fellowships are:

The *Hannah A. Leedom Fellowship of* $1,800 founded by the bequest of Hannah A. Leedom.

The *Joshua Lippincott Fellowship* of $2,000 founded by Howard W. Lippincott, of the Class of 1875, in memory of his father.

The *John Lockwood Memorial Fellowship* of $2,000, founded by the bequest of Lydia A. Lockwood, New York, in memory of her brother, John Lockwood. It was the wish of the donor that the fellowship be awarded to a member of the Society of Friends.

Four other fellowships are open to graduates of Swarthmore College under the conditions described below:

The *Lucretia Mott Fellowship,* founded by the Somerville Literary Society and sustained by the contribution of its life members, yields an annual income of approximately $2,000. It is awarded each year by a committee of the faculty to a woman graduate of that year who is to pursue advanced study at some other institution approved by this committee.

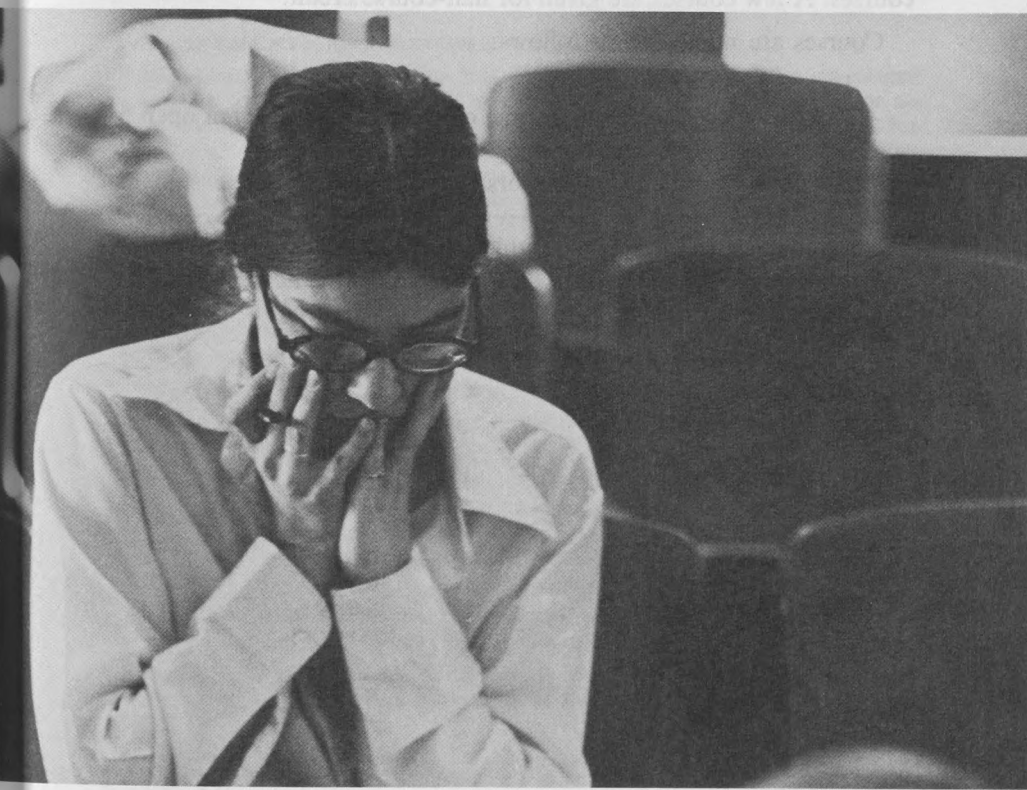
The *Martha E. Tyson Fellowship,* founded by the Somerville Lit-

erary Society in 1913, is sustained by the contributions of life members of the society and yields an income of approximately $2,000. It is awarded each year by a committee of the faculty to a woman senior or graduate of the College who plans to enter elementary or secondary school work. The recipient of the award is to pursue a course of study in an institution approved by the Committee of Award.

*Sigma Xi Research Fellowship.* The Swarthmore Chapter of Sigma Xi appoints, from time to time, as funds are available, Fellows with research grants with a maximum value of $1,000. The holders of this fellowship are usually associates of the chapter who have shown conspicuous ability in graduate studies. The purpose of the chapter in awarding these fellowships is to relieve worthy students from teaching and other distracting duties so that they may concentrate as much as possible upon their research. Applications for these fellowships should be made to the secretary of the chapter not later than the middle of March. Appointments will be announced about the middle of April.

# V

# COURSES OF INSTRUCTION



# COURSES OF INSTRUCTION

The course (semester course) is the unit of credit. Seminars and colloquia are usually given for double credit, i.e., equivalent to two courses. A few courses are given for half-course credit.

Courses are numbered as follows:

1 to 10—introductory courses
11 to 99—other courses. (Some of these courses are not open to freshmen and sophomores.)
100 to 199—seminars for Honors students and graduate students

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Year courses, the number of which are joined by a hyphen (e.g., 1-2) must be continued for the entire year; credit is not given for the first semester's work only.

# ART

HEDLEY H. RHYS, *Professor and Chairman*
ERIC G. CARLSON, *Associate Professor*
TIMOTHY K. KITAO, *Associate Professor*
ALISON M. KETTERING, *Assistant Professor*
HARRIET SHORR, *Assistant Professor*
KIT-YIN TIENG SNYDER, *Assistant Professor* (part-time)†
DANIEL BLACK, *Instructor*

The Department of Art offers historical, critical, and practical instruction in the visual arts. Courses in art history consider questions having to do with the forms, traditions, meaning, and historical context of works of art and architecture; studio courses explore problems of methods, processes, and personal resources which arise in the actual creation of objects in various media.

## Requirements and Recommendations

*Prerequisites:* Art History 1 or 2 is the prerequisite for all other art history courses in the department, except as otherwise noted. The prerequisite for an advanced course covering material before the Renaissance is Art History 1, for all others, Art History 2. Studio Art 1 is the usual prerequisite for studio courses; this prerequisite may be waived by presenting a portfolio. Majors in course and majors and minors in Honors must take Art History 1, Art History 2 and a studio course. It is strongly recommended that these requirements be fulfilled before the junior year.

*Majors in Course:* The program consists of at least eight courses in Art History (including A.H. 1 and 2), plus a studio course, plus Senior Reading (A.H. 97) which is required for graduation. The Course major is required to take at least one course from Group I and two courses from Group II:

Group I: Ancient, Early Medieval and Romanesque, and Gothic Art.

Group II: Northern Renaissance, Italian Renaissance, Baroque, and Modern Art.

*Majors and Minors in Honors:* Majors in Honors must prepare four papers in the department. A minor in Honors consists of two papers. The seminars offered in any one semester vary according to the convenience of the department; in any semester, a course plus an attachment may be substituted for a seminar.

*Seminars:* Course majors may take honors seminars with the consent of the instructor. See Honors Seminars and Colloquia.

*Language Requirements for Graduate Schools:* Students are advised that graduate work in art history requires a reading knowledge of at least German and French.

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†Absent on leave spring semester, 1975.

ART

# Art History

**1, 2. Introduction to Art History.** A critical study of the nature of architecture, sculpture and painting in their historical context. First semester: Ancient Egypt through the late Medieval period; second semester: Early Renaissance to the present. Two lectures and one hour conference section per week.

*Each semester.* Staff.

**11. Design in Drawing and Painting.** The basic elements of design and their function in drawing and painting. Types of harmony, sequence and balance such as linear, tonal, and spatial. The methods of design and representation that characterize the various historical styles. Practical exercises required demand no special technical aptitude since the purpose of the course is to develop a critical understanding of drawing and painting and not technical skill.

*Fall semester.* Mr. Rhys.

**13. Ancient Art.** The art and architecture of the Islands and Mainland Greece from the Minoan-Mycenaean phases through the Hellenistic Age.

*Not offered 1974-75.*

**16. Early Medieval and Romanesque Art.** Art and architecture in the Latin West circa 300-1200.

*Fall semester.* Mr. Carlson.

**17. Gothic Art.** Art and architecture in the Latin West circa 1140-1450. Special emphasis will be placed on developments in France.

*Spring semester.* Mr. Carlson.

**19. High Renaissance and Mannerism.** A study of Italian art in the 16th century with a special emphasis on the accomplishments of Leonardo da Vinci, Raphael, and Michelangelo in Rome and the development of the 'anti-classical' style and theory of art. Consideration will be given to such problems as classicism, the idea of canon in art, art as problem-solving, the nature of stylistic changes, and the relationship between art, personality, and social pressure.

*Fall semester. Not offered 1974-75.* Mr. Kitao.

**20. Northern Renaissance Art.** A selective examination of the major artists of the 15th and 16th centuries: Jan van Eyck, Roger van der Weyden, Hugo van der Goes, Hieronymus Bosch, Pieter Bruegel the Elder and Albrecht Dürer.

*Spring semester.* Ms. Kettering.

**30. Modern Architecture.** An introduction to the nature of architecture and the functions of the architect through a study of the developments in European and American buildings during the late 18th, the 19th and 20th centuries. The specific influence of economic, technological and social changes upon design and structure.

The prerequisite of Art History 1 is waived for students in Engineering.

*Spring semester.* Mr. Carlson.

**31. Modern Painting.** Important stylistic developments in European painting from the French Revolution through Matisse and Picasso: the meanings of the various movements and their relationship to changing social and political attitudes.

*Fall semester.* Mr. Rhys.

**32. American Art.** Architecture, sculpture, and painting in North America

from the Colonial Period to the present day, their connection with European art and their significance as a reflection of American culture.

*Spring semester.* Mr. Rhys.

**51. Asian Art.** An introduction to the history of painting and sculpture in Asia, especially China and Japan, from the earliest phases and origins of pictorial art in China to new movements in the 18th and 19th centuries. Iconography, stylistic definition, and the treatment of form, color, and space as they differ from such concerns in Western art will receive special attention.

*Spring semester.* Mr. Rhys.

**53. Italian Renaissance Art.** A study of the emergence of Renaissance art in Florence. Consideration will be given to certain special problems, such as humanism in art, historicism, scientific method, the narrative in art, and the artist's role in society. Donatello, Masaccio, and Leonardo will be given special attention.

*Fall semester.* Mr. Kitao.

**54. The City.** A study of visual and physical aspects of the man-made environment. The course explores our experience and use of the city, its effect on us, and the nature of its growth and design. It involves perception, analysis and interpretation of form, structure, imagery, and dynamics of selected historical and contemporary examples. The prerequisite of Art History 1 may be waived with the instructor's consent provided the course is not used to meet distribution requirements. The course is for juniors and seniors, but others may be admitted with the instructor's consent.

*Fall semester.* Mr. Kitao.

**55. The Cinema.** An introduction to the study of the cinema as art; a historical survey, examination of techniques, styles, theories, critical methods, and special topics varying from year to year. Screening, discussion, papers, and projects. Prerequisite of Art History 1 may be waived with the instructor's consent provided the course is not used to meet distribution requirements. The course is open to juniors and seniors only, and the class is limited to twenty students.

*Spring semester.* Mr. Kitao.

**56. Baroque Art.** Study of European art of the 17th century. Special problems considered include: the impact of the Catholic Reformation on art and artists, allegory and propaganda in art, the rise of art criticism and academies, and the question of reality and illusion.

*Spring semester.* Ms. Kettering.

**58. Special Topics in Renaissance-Baroque Art.** A selected topic from Western art of the period 1400-1750, which varies from year to year: e.g., a particular artist (Leonardo, Michelangelo, Bernini, Rubens, Rembrandt) and his artistic context; a particular category of objects (statuary, public monuments); a particular theme (landscape, papal Rome, narrative, art and sciences, theory of art).

*Fall semester.* Ms. Kettering.

**91. Special Topics.** Staff.

**93. Directed Reading.** Staff.

**97. Senior Reading.** For Course majors only. As part of this course the students will write a Senior Paper, which will serve as the Comprehensive Examination. The topic of the paper, which may vary from year to year, will be chosen by the Department.

*Spring semester.* Staff.

HONORS SEMINARS AND COLLOQUIA—Open to Art majors in Course and to others with the consent of the instructor.

**101. Ancient Art.** A study of the development of the forms of art and architecture as they express the cultural patterns of Ancient Greece from the Bronze Age through the Hellenistic Age.
*Not offered 1974-75.*

**103. Medieval Art.** Topic varies from year to year.
*Fall semester.* Mr. Carlson.

**104. Renaissance-Baroque Art.** A study of European art of the period 1400-1750, the focus varying from year to year between Italian Renaissance Art and Baroque Art. The following topics will be discussed: humanism in art, art as problem-solving, scientific methods in art, the idea of canon and perfection in art, the nature of stylistic changes, historicism, the question of reality and illusion, commerce and consumption of art, the rise of art criticism, the artist's role in the society.
*Fall semester.* Mr. Kitao.

**105. Northern Renaissance Art.** Developments in painting and the graphic arts during the 15th and 16th centuries in France, the Netherlands and Germany with intensive study of individual masters: Jan van Eyck, Roger van der Weyden, Jean Fouquet, Albrecht Dürer, Hieronymus Bosch, and Pieter Bruegel.
*Spring semester.* Ms. Kettering.

**106. Modern Architecture.**
*Spring semester. Not offered 1974-75.* Mr. Carlson.

**107. Modern Painting.** Important stylistic developments in European painting from the French Revolution through Matisse and Picasso: the meanings of the various movements and their relationship to changing social and political attitudes.
*Fall semester.* Mr. Rhys.

**108. Problems in Twentieth Century Art.**
*Spring semester.* Mr. Rhys.

**109. Master Print Makers.** A consideration of certain problems in the history of the graphic arts. A study of the work of such men as Schongauer, Dürer, Rembrandt, Goya, Daumier, Toulouse-Lautrec, and Picasso for the development of expression in the media of woodcut, engraving, etching, aquatint, and lithography. Students work almost exclusively with originals in the Print Room of the Philadelphia Museum and the Lessing J. Rosenwald Collection in Jenkintown.
*Spring semester. Not offered 1974-75.*

**180. Thesis.** A major in Honors may elect to write a thesis as a substitute for one seminar. The topic must be selected and its plan submitted for the Department's approval no later than the end of the junior year, and if accepted must be completed before the end of the first semester of the senior year.

## Studio Arts

**1. Introduction to Studio Arts.** A six-hour studio course meeting twice a week with exercises in the visual description of objects and ideas. Attention will be given both to the theoretical aspects of the work and to the develop-

ment of studio techniques. Problems in drawing, color, and three dimensional form will be given equal attention.

*Each semester.* Staff.

**3. Drawing.** Six-hour studio course. The student will be expected to fulfill drawing assignments in addition to work in the class. Introduction to the problems of drawing and to the various drawing media.

*Each semester.* Ms. Shorr.

**4. Sculpture.** Six-hour studio course. An introduction and approach to the discovery, exploration, and creation of three dimensional form. A course which will allow the student to work directly with some of the basic concepts, forms, and materials used in producing sculpture.

*Each semester.* Mr. Black.

**8. Painting.**

*Each semester.* Ms. Shorr.

**9. Graphics.** Six-hour studio course. The techniques of intaglio, serigraph, woodcut, and the aesthetic possibilities of these techniques uniquely and in combination.

*Spring semester.* Mr. Black.

**10. Ceramics.** A six-hour course covering many of the different forming (wheel and hand-build), glazing, and firing (raku, low-fire, porcelain, stoneware and salt) techniques in ceramics. The emphasis is on understanding and mastering these techniques and using them to develop a more rigorous personal approach to clay. Prerequisites are a beginning course in pottery and Studio Arts 1. Admission is at the discretion of the instructor and with the approval of the Department.

*Fall semester.* Ms. Snyder.

**Pottery. Beginning course.** An introduction to the techniques of pottery. No credit.

*Fall semester.* Ms. Snyder.

# ASTRONOMY

WULFF D. HEINTZ, *Professor and Chairman*

SARAH LEE LIPPINCOTT, *Lecturer and Director of Sproul Observatory*

JOHN L. HERSHEY, *Assistant Professor*

PETER VAN DE KAMP, *Research Astronomer*

Astronomy deals with the nature of the universe about us and the methods employed to discover the laws underlying the observed phenomena. The introductory courses present the problems in broad outlines, and trace the growth of knowledge of facts and development of theories. The advanced courses and seminars consider some of these areas in detail, with some emphasis on the departmental research programs.

## ASTRONOMY

The principal telescope of the Sproul Observatory, the 24-inch refractor of 36 feet of focal length, has been in constant operation since 1912 and was renovated in 1966. It is used for photographic and visual observations leading to an accurate study of the motions, distances, orbits, and masses of the nearer stellar systems. The astrometric plate collection steadily grows, and is already the largest of its kind to have come from a single instrument. A two-screw measuring machine installed in 1971 provides precise and fast measurements of the photographs. The Sproul Observatory is open to visitors on the second Tuesday night each month during the college year (October through May, see monthly College Calendar for open hours). A 6-inch refractor and an 8-inch reflector are available for student practical work. The library possesses a large collection of research publications acquired through international exchange.

### Requirements and Recommendations

Prerequisites for an Astronomy major are Astronomy 5,6, advanced courses or seminars, combined with work in mathematics and physics, and a reading knowledge of one foreign language.

### Graduate Work

In conformity with the general regulations for work leading to the Master's degree (page 80), this Department offers the possibility for graduate work. Candidates will normally take three or four Honors seminars, selected from mathematics, physics, and astronomy, and present a thesis. A reading knowledge of two foreign languages is required.

Advanced work can also be pursued at the Bartol Research Foundation (page 13), which conducts doctoral programs in physics and astronomy.

**1,2. Descriptive Astronomy.** The courses survey the probing of the universe by theory and observation, and include basic notions of physics as needed in astronomical applications. (For contents see under 5, 6.) Three class periods each week; practical work to be arranged. Recommended as a full-year course.

No prerequisites.

Mr. Hershey and Mr. Heintz.

**5,6. General Astronomy.** The courses introduce the methods and results of Astronomy and Astrophysics, and emphasize some technical and topical aspects.

*Fall:* Instruments. Radiation. Constellations and stars. Structure and evolution of stars. Orbital motions. Sun and Planets.

*Spring:* The celestial sphere. Motions of planets, satellites and stars. The solar neighborhood. The galaxy. Extragalactic systems and large-distance studies.

*Prerequisites:* Mathematics 5, or equivalent. Physics 3,4 may be taken concurrently. Astronomy 1 or 5 is prerequisite for 6.

Mr. Heintz and Mr. Hershey.

**9. Introduction to Meteorology.** Dynamics of the Atmosphere; weather observation and interpretation.

*Fall 1974.* Mr. Heintz.

**51. Basic Celestial Mechanics.** Two-body and three-body problems, perturbation theory, numerical integration, and satellite motions.

*Prerequisite:* Mathematics 5, Astronomy 1 or 5.

*Spring 1975.* Mr. Heintz.

**62. Stellar Interiors and Evolution.** Observational material. Opacities. Nuclear reactions. Polytropes. Numerical solutions. Stellar structure and evolutionary tracks. Study of current papers.
*Spring 1975.* Mr. Hershey.

HONORS SEMINARS

**101. Astrometry.** Apparent stellar places. Fundamental positions. Relative astrometry. Analysis of binary stars. Theory of errors.
*Fall 1974.* Mr. Heintz.

**121. Research project.** Every semester by arrangement.
Staff.

# BIOLOGY

LAUNCE J. FLEMISTER, *Professor*†
LUZERN G. LIVINGSTON, *Professor**
NORMAN A. MEINKOTH, *Professor and Chairman*
KENNETH S. RAWSON, *Professor*
JOHN B. JENKINS, *Associate Professor*
ROBERT E. SAVAGE, *Associate Professor*
JAMES C. HICKMAN, *Assistant Professor*
MARGARET L. MIOVIC, *Assistant Professor*
BENJAMIN W. SNYDER, *Assistant Professor*
GLORIA ROSEN, *Assistant*
BARBARA Y. STEWART, *Assistant*
JEAN L. TOMEZSKO, *Assistant*

The student may be introduced to the study of biology by taking Biology 1 and Biology 2. Either course may be taken first. Together they offer an overview of the field of biology. A diversity of advanced courses, some offered in alternate years, affords the student the opportunity of building a broad biological background while concentrating, if he chooses, in some specialized area such as plant biology (botany), animal biology (zoology), cellular and developmental biology, physiology, genetics and evolution, ecology or systematics.

REQUIREMENTS AND RECOMMENDATIONS

Students electing a Course major in biology should include the following supporting subjects in addition to the minimum of eight courses composing the major: introductory chemistry, at least one semester of organic chemistry, and two semesters of college mathematics. These courses should be completed before the senior year. Introductory physics (Physics 1,2) is strongly recommended, and is prerequisite to some departmental offerings. Further, it should be noted that medical schools and graduate schools in biology require introductory physics for admission.

*Absent on leave, fall semester, 1974-75.
†Absent on leave, spring semester, 1974-75.

## BIOLOGY

### Honors Work

Requirements for admission to Honors with a major in biology include: Biology 1 and 2, an advanced course in biology, plus courses in chemistry and mathematics as cited above, with physics strongly recommended. It should be noted that certain subjects likely to be chosen as minors in other departments require a second year of mathematics.

Students planning an Honors minor in biology should note the prerequisites listed for each Honors offering, and consult with the department chairman.

**1. Principles of Biology.** An introduction to the study of phenomena fundamental to living systems. The emphasis will be at the cellular level and will include the consideration of cell structure and function, genetics, cell differentiation, organic evolution, and ecology.

Three lectures and one three-hour laboratory per week.

*Fall semester.* Staff.

**2. Organismal Biology.** An introduction to the study of whole organisms, chiefly the higher plants and animals. While basic taxonomy will be included, stress will be placed on adaptive aspects of the morphology and physiology of organisms, their development, behavior, ecology and evolution.

Three lectures and one three-hour laboratory per week.

*Spring semester.* Staff.

**12. Vertebrate Physiology.** A general consideration of the functional process in animals with emphasis placed on mammals and other vertebrates. The aspects of adaptation of the animal to environmental stress are treated in such a way as to serve the individual student's area of concentration. Two lectures and one conference per week. This course will not count toward a major in biology.

*Spring semester. Not offered in 1974-75.* Mr. Flemister.

**14. Vertebrate Morphology.** A consideration of the vertebrate body plan at the microscopic, developmental and adult gross morphological levels. Areas stressed in some detail will include the structure and microscopic appearance of vertebrate tissues and organs, embryonic development of an amphibian through organogenesis and adult mammalian gross morphology.

Three hours of lecture or discussion and one laboratory period per week.

Prerequisite: Biology 2.

*Fall semester.* Mr. Meinkoth.

**15. Taxonomy of Seed Plants.** An introduction to the classification of flowering plants and gymnosperms and its underlying theory and methods. Emphasis is upon biologically, culturally, and economically important aspects of world flora, with special reference to native spring plants. Identification at the family level is stressed. Recent advances in bio-systematics, plant speciation, biochemical and numerical taxonomy, phylogeny, and biogeography are included. Suggested as an early course for biology majors and as a cultural course for non-majors. Three lectures and one field trip and/or laboratory per week.

Prerequisite: Biology 2 or consent of instructor.

*Spring semester.* Mr. Hickman.

**16. Developmental Plant Anatomy.** The fundamentals of anatomy of seed plants approached from a developmental standpoint. The structure and behavior of meristems, problems and processes of differentiation, and a detailed

analysis of cellular, tissue and organ structure in higher plants.
Three lectures and one three-hour laboratory period per week.
Prerequisite: Biology 1,2.
*Alternate years, spring semester. Offered 1974-75.* Mr. Livingston.

**18. Biology of Lower Plants.** An introduction to the algae, fungi, mosses, and ferns, including aspects of their classification, phylogeny, structure, physiology, and ecology. The laboratories are in part exploratory and experimental. Their content depends in part upon the current interests of staff and students.
Three lectures and one field trip and/or laboratory period per week.
Prerequisite: Biology 1,2.
*Alternate years, fall semester. Not offered in 1974-75.*

**19. Human Evolution.** (See Sociology-Anthropology 19). This course deals with the evolution of man and culture. Central issues are: the principles and mechanisms of evolution; the place of primates in the vertebrate subphylum; the taxonomy of primates; hominid radiation and the emergence of *Homo sapiens.* Other issues to be considered will focus on culture as a mode of adaptation. Specifically, attention will be given to the relations between human biology, psychology, and culture. The course is not open for credit to students who have credit for Biology 22 (Organic Evolution), nor will it satisfy group 1 requirements.
Biology 1 is recommended.
*Fall semester. Not offered 1974-75; offered 1975-76.* Mr. Jenkins and Mr. Piker.

**20. Biology of the Gene.** The course will deal with three basic areas: The discovery, structure, and replication of the genetic material; the transmission of the genetic material; and the mode of action of the genetic material, including a consideration of development genetics. Some time will be devoted to the historical development of genetic concepts. Areas of genetics not covered in this course (i.e., population genetics, quantitative inheritance, etc.) will be treated in Biology 22.
Three lectures per week and a laboratory or library project.
Prerequisites: Biology 1, or consent of the instructor.
Recommended: Organic chemistry.
*Spring semester.* Mr. Jenkins.

**21. Cell Biology.** A study of the ultrastructure and function of cell components, including cell division and development, biosynthesis of macro-molecules, and intermediary metabolism. Laboratory exercises are designed to illustrate the variety of approaches to findings in cell biology.
Prerequisites: Biology 1, and concurrent registration in organic chemistry.
*Spring semester.* Mr. Savage.

**22. Organic Evolution.** An introduction to the history of evolutionary thought; an analysis of genetic mechanisms as they apply to the problem of speciation; and a consideration of selection of evolutionary pathways and the evidence for them. This course is not open for credit to students who have credit for Biology 19: Human Evolution.
Two lectures and one discussion session per week.
Prerequisites: Biology 1 and 2.
*Fall semester. Offered in 1974-75; not offered in 1975-76.* Mr. Jenkins.

**30. Topics in Genetic Research.** A laboratory course designed to acquaint the student with some of the more sophisticated techniques and approaches to modern genetic analysis. The emphasis will be on various types of viruses, bacteria and Drosophila.

One afternoon per week of literature discussion and research.

Prerequisites: Biology 20 and consent of instructor. Enrollment limited.

*Fall semester.* Mr. Jenkins.

**31. Endocrinology.** A survey of the various vertebrate endocrine glands and the hormones which they produce. Hormones will be studied with respect to their (1) integration of body functions, and (2) biochemical mechanism of action. Areas covered will include reproductive, neuro, adrenal, thyroid and general metabolic endocrinology.

Prerequisites: Biology 1, and 2, and Organic Chemistry.

*Fall semester.* Mr. Snyder.

**35. Biomedical Engineering.** (See Engineering 35).

**38. Microbiology.** A study of the basic principles and relationships common to microorganisms with an emphasis on bacteria. Differences among microorganisms will be considered with respect to ecology, physiology, biochemistry and genetics.

Three lectures and one laboratory period per week.

Prerequisites: Biology 1,2, and Organic Chemistry.

*Fall semester.* Ms. Miovic.

**40. Man and Environment.** Consideration is given to the methodology of ecological analysis and its application to the study of the causes and consequences of the growth of technology and human populations, especially in relation to the question of environmental deterioration. An attempt is made to synthesize approaches and information from various disciplines within the social and natural sciences.

Prerequisites: Completion of distribution requirements in Groups 1 (Natural Sciences and Engineering) and 4 (Social Sciences).

*Alternate years, spring semester. Offered in 1974-75; not offered in 1975-76.* Mr. Hickman.

**52. Developmental Biology.** A study of animal morphogenesis, with emphasis on vertebrate development. Lectures will consider the relationship of the embryo to its environment, the storage, partitioning, and expression of information during early development, the process of specializations and interactions of cells to form organs and tissues, and selected topics of postembryonic development. The laboratory will be devoted to the developmental anatomy of selected vertebrates, and the observation of living vertebrate and invertebrate material under normal and experimental conditions.

Three lectures and one laboratory per week.

Prerequisites: Biology 1,2,14.

Chemistry 28 recommended.

*Spring semester.* Mr. Snyder.

**54. Biology of Parasitism.** A consideration of parasitology with reference to evolution and adaptation to the parasitic habit. Surveys are made of parasites in native animals. Classification, life cycles and epidemiology are reviewed.

Prerequisites: Biology 1, 2.

*Alternate years, spring semester.* Mr. Meinkoth.

**56. Invertebrate Zoology.** A course designed to acquaint the student with the functional morphology, classification, phylogeny and special problems of the invertebrate phyla.

Three lectures and one laboratory period per week. Occasional field trips.

Prerequisites: Biology 1, 2.

*Spring semester.* Mr. Meinkoth.

**57. Comparative Physiology.** A course of lectures and laboratory experiments treating functional processes from the standpoint of adaptation of the animal to its environment. These processes in representative animals are compared in order to follow their elaboration from the more general to the more specialized.

Two lectures and one laboratory period per week.

Prerequisites: Biology 14, organic chemistry and physics.

*Fall semester.* Mr. Flemister.

**58. Environmental Physiology.** A course of lectures, discussions and experiments concerning the physiological adaptations of representative animals to environmental stress. Requirements and availability of optimum conditions of temperature, oxygen, food-stuffs and the maintenance of ionic independence are appraised.

Two lectures and two laboratory periods per week.

Prerequisite: Biology 57.

*Spring semester. Not offered in 1974-75.* Mr. Flemister.

**60. Biology of Animal Communities.** The study of animals at the emergent level of populations. Problems of animal behavior as related to the growth and maintenance of populations will be considered with particular reference to communication and social interaction within animal groups. Both field and laboratory study techniques will be used.

Three lectures per week and one laboratory meeting per week.

Prerequisite: Biology 2.

*Fall semester.* Mr. Rawson.

**67. Plant Physiology.** An integrated study of the physiological processes of higher plants, including general cellular physiology, water relations, mineral nutrition, enzyme action, photosynthesis, metabolic processes, translocation, the physiology of growth and development, and related topics.

Two lectures, one discussion period, and one laboratory period per week.

Prerequisites: Biology 1,2 and organic chemistry.

*Alternate years, spring semester. Not offered in 1974-75.*

**68. Advanced Microbiology.** An extension of Microbiology. Physiological and biochemical differences between microorganisms will be stressed. Some of the reading will be in current research journals. The last portion of the laboratory work will be devoted to independent work by the student.

Prerequisites: Biology 38.

*Spring semester.* Ms. Miovic.

**70. Plant Ecology.** A study of the response of plant individuals and communities to environmental factors and the influence of plants upon their own environments and those of selected other organisms. The physical nature of the ecosystem is developed, with reference to the role of plants in energy flow, material cycles, and soil formation. Divergent concepts of niche, community,

and biotic diversity are discussed, as are world patterns of vegetation and productivity. Laboratory work emphasizes the collection, analysis, and interpretation of field data.

Three lectures and one field trip and/or laboratory period per week.

Prerequisites: Biology 2 and permission of the instructor.

Recommended: Biology 15.

*Fall semester.* Mr. Hickman.

**93. Directed Reading.** With the permission of a staff member who is willing to supervise it, a qualified student may undertake a program of directed reading in an area of biology not included in the curriculum, or as an extension of one of his courses.

*Fall or spring semester.* Staff.

**94. Research Project.** With the permission of the Department, qualified students may elect to pursue a research program not included in the regular Course program.

Staff.

HONORS SEMINARS

**102. Cytology.** A study of the structure and function of the cell. Living material will be examined and modern microscopical techniques employed in the laboratory.

Prerequisites: Biology 1 and Organic Chemistry.

*Fall semester:* open to those who have had Biology 21.
*Spring semester:* open to those who have not had Biology 21. Mr. Savage.

**103. Analysis of Development.** Discussions will be devoted to the nature of the developmental process, and analyses of selected problems of differentiation and morphogenesis. Laboratories will include a survey of vertebrate developmental anatomy, an introduction to experimental analysis of developing systems, and individual student projects.

Prerequisites: Biology 1,2; 14 or 16. Biology 20 and Chemistry 28 are recommended.

*Spring semester.* Mr. Snyder.

**104. Comparative Physiology.** An intensive consideration of the physical and chemical phenomena underlying the function of animals. A comparative approach is maintained in order to consider the progression from more general to the most specialized adjustments, acclimatizations and adaptations of animals to physical, chemical and biological stresses in the environment. The terminal portion of the laboratory program is devoted to the pursuit of original, independent work by the student.

Prerequisites: Biology 14, Organic Chemistry and Physics.

*Fall semester.* Mr. Flemister.

**105. Microbiology.** A study of the basic principles and relationships common to microorganisms. Much of the information will be obtained from readings in current research journals. Laboratory work is considered a vital part of this course and will require at least one full day a week. Laboratory work during the first part of the semester will cover basic techniques; the last portion will be devoted to original research.

Prerequisites: Biology 1 and 2, and Organic Chemistry.

*Spring semester.* Ms. Miovic.

**108. Physiological Basis for Animal Behavior.** Quantitative description and analysis of animal behavior and the sensory processes used in communication and orientation. Field and laboratory experience will illustrate the seminar topics. Specific problems will serve as a basis for subsequent seminar discussions. Consequently, in addition to the seminar meetings, a commitment is expected to a full day of laboratory or field investigation per week, free of conflicting academic course commitments.
Prerequisites: Biology 1, 2, and permission of the instructor.
*Fall semester.* Mr. Rawson.

**111. Plant Physiology.** An extension of the area covered in Biology 67, with particular emphasis on a critical study of original sources, both classical and current. The seminar discussion is accompanied by a full day of laboratory work each week.
Prerequisites: Biology 1,2 and Organic Chemistry.
*Alternate years, spring semester. Not offered in 1974-75.* Mr. Livingston.

**112. Problems of Plant Growth and Development.** Meets with Biology 16 for lectures and laboratory. Additional weekly seminar discussions centering around current problems and progress in plant morphogenesis.
Prerequisites: Biology 1,2 and permission of the instructor.
*Alternate years, spring semester. Offered in 1974-75.* Mr. Livingston.

**113. Genetics.** A seminar treatment of the area described for Biology 20, with particular emphasis on current research in the field of inheritance in all its aspects. The seminar discussion is accompanied by a full day of laboratory work each week.
*Spring semester.* Mr. Jenkins.

**118. Plant Ecology.** Meets with Biology 70 for lectures, laboratories and field trips. Discussion periods are devoted to consideration of advanced or specialized topics.
Prerequisites: Biology 1,2 and permission of the instructor.
*Alternate years, fall semester.* Mr. Hickman.

**180. Thesis.** With the permission of the Department, qualified students may elect to pursue a research problem not included in the regular offerings in Honors. The thesis will be submitted for evaluation by an Honors Examiner.
Staff.

# BLACK STUDIES

The purpose of the Black Studies program at Swarthmore College is (1) to enrich the general education of Swarthmore students; (2) to expose all interested students to the multiple contributions and culture of black Americans; and (3) to inform students participating in the program about the specific social, political, and economic conditions, past and present, affecting the development of black communities, particularly in the United States, but also in the Caribbean and in Africa. By taking at least five semester courses in Black Studies students may graduate with a concentration in this field in addition to their regular major. The formal course program will be supplemented

from time to time through special colloquia, guest speakers, or other presentations of special interest to students interested in Black Studies. For descriptions of the courses listed below see the listings under the several departments.

**Economics 25. Labor Problems and Manpower Policy.**
*Fall semester.* Mr. Pierson.

**Economics 26. Social Economics.**
*Fall semester. Not offered in 1974-75.* Mr. Hollister.

**Economics 41. Urban Economics.**
*Fall semester.* Mr. Stull.

**Education 17. Problems in Urban Education.**
*Spring semester.* Ms. Brodhead.

**English Literature 28. Black American Literature Before 1890.**
*Spring semester.* Mr. James.

**English Literature 29. Black American Literature Since 1890.**
*Fall semester.* Mr. James.

**English Literature 47. The Contemporary Black Writers of the United States.**
*Fall semester.* Mr. James.

**English Literature 49. The Black American Autobiography.**
*Spring semester.* Mr. James.

**History 4. South Africa.**
*Fall semester.* Mr. Wright.

**History 7. African-American History.**
*Fall semester, 1975.* Ms. Morgan.

**History 8. Africa.**
*Fall semester.* Mr. Wright.

**History 39. Topics in African-American History.**
*Not given in 1974-75.* Ms. Morgan.

**History 49. African Cultures in Latin America.**
*Spring semester, 1975.* Mr. Wood.

**Linguistics 7. The Evolution of Afro-American Dialects.**
*Spring semester.* Mr. Baugh.

**Political Science 11. Problems in Community Government.**
*Spring semester.*

**Political Science 21. Politics of Africa.**
*Spring semester.* Mr. Jalloh.

**Religion 7. Primitive Religions.**
*Fall semester.* Ms. Robinson.

**Religion 22. Black Religion.**
*Spring semester.* Mr. Bryant.

**Sociology-Anthropology 42. Caribbean Society.**
*Fall semester.* Mr. Bramson.

# CHEMISTRY

EDWARD A. FEHNEL, *Professor*†
PETER T. THOMPSON, *Professor*
JAMES H. HAMMONS, *Associate Professor*
RAYMOND J. SUPLINSKAS, *Associate Professor and Chairman*
FRANCIS H. MARTIN, *Assistant Professor*
DWIGHT A. SWEIGART, *Assistant Professor*
URSULA M. DAVIS, *Assistant*
MARGARET M. LEHMAN, *Assistant*

The aim of the department of chemistry is to provide sound training in the fundamental principles and basic techniques of the science rather than to deal with specialized branches of the subject.

The minimum requirement for a major in chemistry is eight courses in the department. This program normally will include two courses each in organic and physical chemistry. Note that the prerequisites for physical chemistry include a year each of college-level physics and mathematics.

Those students planning further professional work in chemistry are strongly advised to include in their programs Physics 3,4 (rather than Physics 1,2), a second year of mathematics and two additional courses in chemistry. Further, proficiency in reading scientific German, Russian or French is an asset to the practicing chemist.

To accommodate varying backgrounds in the preparation of incoming students the department provides three routes for entrance to its advanced level program. The normal route is to take Chemistry 1,2, followed by 28,29. Students with an especially strong pre-college background in mathematics may be advised to take Chemistry 11,12 followed by 28,29. Still others with strong preparation in pre-college chemistry may be advised to begin with Chemistry 28,29 followed by 11,12 or Physical Chemistry.

Students who enter college with advanced training in chemistry are encouraged to take a placement examination during freshman orientation week to determine which college chemistry course they should take.

**1,2. Introduction to Chemistry.** A study of the central concepts and basic principles of chemistry; the interpretation of chemical properties and reactions through equilibrium constants, oxidation potentials, free energies, thermochemistry; the relation of chemical properties to atomic and molecular structure and to the Periodic Table; rates and mechanisms of chemical reactions.
One laboratory period weekly.
*Fall and spring semester.* Mr. Suplinskas and Mr. Sweigart.

**11, 12. General Chemistry.** The subject matter of this course parallels that of Chemistry 1,2 but at a more advanced and mathematically oriented level. The course is intended for students with a strong interest in chemistry, whose high school preparation has been extensive, especially in mathematics. Admission to this course is based on consultation with the staff and a placement examination. Prior or concurrent enrollment in physics is highly desirable.
One laboratory period weekly.
*Fall and spring semester.* Mr. Suplinskas and Mr. Sweigart.

†Absent on leave, spring semester, 1975.

**28, 29. Organic Chemistry** An introduction to the chemistry of the more important classes of organic compounds, with emphasis on nomenclature, structure, reactions, and methods of synthesis. Current theoretical concepts of structure and mechanism are applied throughout the course to the interpretation of the properties and reactions of a wide variety of organic compounds. The laboratory work illustrates some of the principles and reactions discussed in the classroom and provides practical experience in the techniques involved in synthesizing, isolating, purifying, and characterizing organic compounds.

One laboratory period weekly.

Prerequisite: Chemistry 2 or 12 or permission of the instructor.

*Fall and spring semester.* Mr. Fehnel and Mr. Hammons.

**51. Physical Chemistry for the Biological Sciences.** An introduction to some basic concepts of physical chemistry with emphasis on application to biochemistry. Topics include the application of elementary thermodynamics to equilibria and solution chemistry; kinetics and mechanisms including enzyme catalysis; characterization and transport properties of macromolecules; metalloenzymes: structure, spectra, magnetic properties, role of metal in catalysis; and applications of absorption spectroscopy. The course is not intended to be highly mathematical; rather, general principles and applications are stressed.

Prerequisites: Chemistry 2 or 12, a year of college mathematics, Physics 1,2.

One laboratory period weekly.

*Fall semester.* Mr. Martin.

**52. Physical Chemistry.** A continuation of the examination of the traditional topics of physical chemistry begun in Chemistry 51.

One laboratory period weekly.

*Spring semester. Not offered 1974-75.*

**56. Organic Structure Determination.** Classroom and laboratory study of the principles and techniques involved in the elucidation of the structures of organic compounds. Emphasis is placed on the correlation of structure and properties of organic molecules and on the theoretical principles underlying various chemical and spectroscopic methods of identification and structure determination.

Prerequisite: Chemistry 28,29.

One laboratory period weekly.

*Fall semester.* Mr. Hammons.

**57. Analytical Chemistry.** Many of the principles and techniques of analytical chemistry are taught within the context of other courses listed in this section of the catalogue. This course is intended to provide further, and more advanced, experience with the theories, techniques and instruments used in analysis.

Prerequisite: Introductory Physical Chemistry 51.

**58. Biological Chemistry.** An introduction to the chemistry of living systems, a study of the relationship of molecular structure and chemical reactivity to biological function. Included as topics are structure, and properties of proteins and nucleic acids, metabolism and molecular genetics.

Prerequisite: Chemistry 1, 2 or 11, 12 and 28, 29.

One laboratory period weekly.

*Fall semester.* Mr. Martin.

**63. Quantum Chemistry.** Quantum theory is developed and applied throughout to a variety of topics including: atomic structure, molecular and atomic spectroscopy, theories of chemical bonding, and molecular structure determination. Symmetry and group theoretical arguments are developed and applied extensively.

Prerequisite: Chemistry 51,52, or 101 and a second year of mathematics including some linear algebra. Senior physics and engineering students may take Chemistry 63 without 51,52 provided they have met the prerequisites.

*Fall semester.* Mr. Thompson.

**64. Topics in Advanced Physical Chemistry.** Designed to follow Chemistry 63, this course treats specialized topics of interest in current physical chemistry. Content may vary from year to year and include such areas as statistical thermodynamics, spectroscopy, current research in chemical kinetics and electrolyte solutions.

*Spring semester.* Mr. Suplinskas.

**65. Advanced Inorganic Chemistry.** Important principles for the understanding of the chemical behavior of inorganic compounds are discussed. Topics include: electronic structure of atoms, ionic and covalent bonding, molecular orbital theory applied to inorganic compounds, and inorganic reaction mechanisms. Considerable emphasis is placed on the chemistry of transition metal coordination compounds through the application of ligand field theory.

Prerequisite: Chemistry 52 or 101. Chemistry 63 is highly desirable.

*Spring semester.* Mr. Sweigart.

**67. Physical Organic Chemistry.** Selected topics in organic chemistry, including resonance and molecular orbital concepts, physical properties of organic compounds, stereochemistry, mechanisms of ionic reactions, free radicals, pericyclic reactions, photochemistry, and other topics of current interest. A familiarity with physical chemistry is desirable.

Prerequisite: Chemistry 1, 2 or 11,12 and 28, 29.

*Fall semester.* Mr. Hammons.

**68. Advanced Laboratory.** Individual projects of the investigative or research type in which the student has primary responsibility for the design of the experiment and the solution of the problem. Normally two or three projects in different areas will be assigned in each semester. This laboratory work is intended to give the student practical experience in the solution of a research problem, to develop facility in the use of the chemical literature and in the interpretation and communication of experimental results, and to stimulate interest in current developments in chemical research.

A prerequisite to this course is normally the completion of seven semester courses in chemistry.

*Both semesters.* Staff.

**78. Advanced Biological Chemistry.** Reading and laboratory in a few important areas of current biochemistry, such as macromolecular structure and function, mitochondrial metabolism, immunochemistry, membranes, contractile mechanisms, and regulation. Topics chosen will depend on student background and interest. Biology 20 and/or 21 and one term of physical chemistry are recommended.

Prerequisite: Chemistry 58.

One discussion period weekly, laboratory to be arranged.

*Spring semester.* Mr. Martin.

**91. Special Topics.** The course provides an opportunity for qualified advanced students to undertake original investigations or to make detailed literature studies of selected topics in the fields of inorganic, organic, analytical, or physical chemistry. Students who propose to take this course should consult with the appropriate instructor during the early part of the semester preceding that in which the work is to be done.

Approximately ten hours of laboratory and/or library work weekly.

*Fall and spring semester.* Staff.

HONORS SEMINARS

Before admission to Honors work, the chemistry major should complete Chemistry 1,2 or 11,12 and 28,29, two years of mathematics and Physics 1,2. In addition to selecting one of the seminars below. Honors students may prepare for papers in Biochemistry (Chemistry 58, 78), and Advanced Physical Chemistry (Chemistry 63,64). Consult with the Department chairman.

**101. Physical Chemistry.** The gaseous liquid and solid states, solutions, elementary thermodynamics, chemical equilibria, electrochemistry, the kinetics of chemical reactions, elementary quantum theory and statistical mechanics. Prerequisites: One year of college-level physics and mathematics through multi-variable calculus.

One seminar and laboratory weekly.

*Spring semester, 1974-75.* Mr. Thompson.

*To be offered fall semester, 1975-76.*

**106. Physical Organic Chemistry.** An intensive study of essentially the same material covered in Chemistry 67. A familiarity with physical chemistry is desirable.

Prerequisites: Chemistry 1,2 or 11,12 and 28,29.

*Fall semester, 1974-75.* Mr. Hammons.

*To be offered spring semester, 1975-76.*

**180. Thesis.** Honors candidates may write a thesis as preparation for one of their papers. The thesis topic must be chosen in consultation with some member of the staff and approved early in the semester preceding the one in which the work is to be done.

# CLASSICS

RUSSELL MEIGGS, *Cornell Visiting Professor**
HELEN F. NORTH, *Professor and Chairman*
MARTIN OSTWALD, *Professor*‡
THOMAS N. MITCHELL, *Associate Professor*
GILBERT P. ROSE, *Associate Professor*‡
DANIEL TOMPKINS, *Assistant Professor*

The Department of Classics offers instruction in the various fields which constitute the study of Greek and Roman culture. Courses numbered from 1 to 20 are devoted to the Greek and Latin languages and literatures. Courses numbered from 31 onwards presuppose no knowledge of the Greek or Latin languages and are open (except for 42 and 44) without prerequisite to all students; they deal with the history, mythology, religion, archaeology, and other aspects of the ancient world and include the study of classical literature in translation.

Swarthmore College contributes to the American Academy in Rome and the American School of Classical Studies in Athens, and its students have the privileges accorded to undergraduates from contributing institutions (use of the library at both schools and consultation with the staff). Swarthmore is also one of the institutions sponsoring the Intercollegiate Center for Classical Studies in Rome, which provides facilities for the study of Classics, Archaeology, and Ancient History. Classics majors, recommended by the Department, are eligible to study at the Center, usually during their junior year, either for one semester or for two.

## Requirements and Recommendations

Greek, Latin, or Ancient History may be offered as a major subject either in Course or in Honors, and as a minor subject in Honors.

A major in Greek or Latin in Honors or in Course should complete during the first two years either Intermediate Greek or Intermediate Latin.

In Honors, a major in Greek is also expected to study Latin through the intermediate level and a major in Latin is expected to study Greek through the intermediate level before graduation.

Minor students in Greek or Latin in Honors should complete during the first two years either Intermediate Greek or Intermediate Latin.

Majors in both Honors and Course are required to take for at least one semester a course in prose composition (Greek 9,10 or Latin 9,10).

In the Honors program, three or four papers constitute a major in Greek or in Latin. Normally all but one of these will be prepared for by seminars. Either Directed Reading in a field in which a seminar is not given (course 93), a thesis, or a course supplemented by additional independent work (i.e., an "attachment") may be used to prepare for the remaining paper. A minimum of two papers constitutes a minor in Greek or in Latin, at least one of which must be prepared for by a seminar.

A major in Ancient History will consist of (1) Classics 42, with attachments, (2) Classics 44, with attachments, and (3) either or both of the following: Greek 113, Latin 102. The prerequisites for Classics 42 and 44 are Classics 31

*Fall semester, 1974-75.
‡Absent on leave, 1974-75.

and 32. For Greek 113 the prerequisite is one year of Intermediate Greek, for Latin 102, one year of Intermediate Latin.

A minor in Ancient History will consist of (1) and (2) above, with the specified prerequisites.

Majors in Latin in Course or Honors are eligible for certification as secondary school teachers in Pennsylvania, provided that they include in their programs a course in Roman history and either Classics 35 or Classics 36.

## Greek

**1-2. Intensive First-year Greek.** Greek 1 (fall) imparts a basic knowledge of Ancient Greek grammar sufficient to equip the student to begin reading after one semester. It meets four days per week and carries 1½ credits. Greek 2 (spring) is an introduction to Greek literature. Two major works from the Classical period are studied: a dialogue of Plato plus a tragedy by Sophocles or Euripides. It meets four days per week and carries 1½ credits.

*Year course.* Mr. Tompkins.

**9, 10. Greek Prose Composition.** Course meets one hour a week. A requirement for majors, this course is recommended in conjunction with courses at the intermediate level or above, to provide the student with grammatical and stylistic exercise.

*Fall semester.* Mr. Mitchell.

**11. Intermediate Greek Reading.** A tragedy and some Attic prose are read.

*Fall semester.* Mr. Tompkins.

**12. Homer.** Selections from either the *Iliad* or the *Odyssey* are read in Greek; the remainder of the poem is read in translation.

*Spring semester.* Mr. Tompkins.

**13, 14. Greek Prose Authors.** The works read are determined by the interests and needs of the members of the class. These readings are supplemented by a survey of the history of Greek Literature. Credit is given for each semester.

Mr. Ostwald.

**15, 16. Greek Poets.** The works read are determined by the interests and needs of the members of the class. Credit is given for each semester. The course is offered only when required.

Miss North.

**19. Comparative Grammar of Greek and Latin.** A study of the morphology, phonology, and inflection of Greek and Latin words derived from Indo-European. Students are expected to have the equivalent of at least two college years of one language and one college year of the other. No prior experience in linguistics is assumed.

*Spring semester. Not offered 1974-75.* Mr. Rose.

**91. Special Topics.** Readings selected to fit the needs of individual seniors in preparation for their comprehensive examinations.

Staff.

**93. Directed Reading.** A program of independent work under the supervision of the instructor. It is open only to advanced students and may be taken only with the consent of the department chairman.

Staff.

## Latin

**1-2. Intensive First-year Latin.** An intensive course in the essentials of Latin grammar aiming to provide sufficient knowledge of the language to make possible the study and appreciation of Latin literature.

Study of the language is combined with a weekly meeting in which students are introduced to a wide range of topics related to the study of Latin. These include such subjects as Roman art, archaeology, palaeography, religion, and (in translation) masterpieces of Latin literature. These meetings will normally be conducted by specialists from the Swarthmore faculty and from neighboring colleges.

The course will have four one-hour meetings each week, for the study of the language, and one two-hour meeting each week for lecture and discussion. It carries one and one-half course credits each semester.

*Year course.* Mr. Mitchell.

**9, 10. Latin Prose Composition.** The development of Latin prose style is studied, with an analysis of Latin texts and extensive translation of English into Latin. A requirement for majors, it is recommended in conjunction with Latin 11 and Latin 12. The course meets one hour a week.

*Half course, each semester.* Mr. Mitchell.

**11. Intermediate Latin: Catullus.** A study of the lyric, elegiac, and hexameter poetry of Catullus. This course follows Latin 2 and is open to those with two or three years of high school Latin.

*Fall semester.* Miss North.

**12. Intermediate Latin: Cicero.** An Oration and Selected Letters. This course is designed to introduce students to a great historical and literary figure of the Roman Republic. It combines a study of his major political and literary achievements with a careful analysis of his prose style.

*Spring semester.* Mr. Mitchell.

**13. Literature of the Augustan Age.** The subject in 1974-75 will be narrative techniques in prose and poetry.

*Fall semester.* Mr. Tompkins.

**14. Mediaeval Latin.** Works chosen from the principal types of mediaeval Latin literature (including religious and secular poetry, history and chronicles, saints' lives, satire, philosophy, and romances) are studied in this course.

*Spring semester.* Miss North.

**91. Special Topics.** Readings selected to fit the needs of individual seniors in preparation for their comprehensive examinations.

Staff.

**93. Directed Reading.** A program of independent work under the supervision of the instructor. It is open only to advanced students and may be taken only with the consent of the department chairman.

Staff.

## Ancient History and Civilization

**31. History of Greece.** The course is devoted to the study of the political and social history of the Greek states to the time of the Hellenistic kingdoms. This is preceded by a brief survey of the Oriental civilizations by which the Greeks were influenced. Special attention is given to the 6th and 5th centuries B. C. Considerable reading is done in the primary sources in translation. Classics 31

meets the distribution requirement for Group 3; it counts towards a major in History.

*Fall semester.* Mr. Meiggs.

**32. The Roman Republic and Early Empire.** A study of the Roman world in the period 300 B.C.—A.D. 38. The following subjects will be dealt with in detail: (1) The evolution of the republican constitution, (2) Rome's wars of expansion and acquisition of empire, (3) The Roman Revolution, (4) The Augustan Principate, (5) The Julio-Claudian Dynasty, (6) Art, Literature, and Thought.

Students will be required to read the pertinent original sources in translation as well as a selection of modern viewpoints. There is no prerequisite. Classics 32 meets the distribution requirement for Group 3, and counts towards a major in History.

*Spring semester.* Mr. Mitchell.

**33. Greek Literature in Translation:** The topic and the readings vary from year to year, but always include major works by Homer, the tragic poets, the historians, and the philosophers.

*Given in alternate years. Fall semester, 1975.* Mr. Rose.

**35. Latin Literature in Translation—Classical and Mediaeval.** The works studied in this course range in time from the age of the Roman Republic to the twelfth century after Christ. They include the major authors of the classical period, St. Jerome and St. Augustine from the Latin Fathers, and from the Middle Ages Boethius, Prudentius, the chief figures of the Carolingian Renaissance, and the writers of Mediaeval Latin hymns and secular poetry.

The course is given in alternate years.

*Spring semester, 1976.* Miss North.

**36. Classical Mythology in Literature and Art.** The course is designed to make students familiar with those myths and legends which have served as material for writers and artists from ancient times to the present. The principal works studied are Homer's *Odyssey,* Hesiod's *Theogony,* selected Greek tragedies, Virgil's *Aeneid,* and the *Metamorphoses* of Ovid. A study is made of the way in which mythological themes have been handled in painting and sculpture at various periods, and topics for papers provide an opportunity for the study of the treatment of mythology by writers from the Renaissance to modern times.

The course is normally given in alternate years.

*Fall semester, 1974.* Miss North.

**37. Ostia and Rome.** A study of urban problems in antiquity, with emphasis on Roman economic history and relations between Rome and her principal seaport.

*Fall semester, 1974.* Mr. Meiggs.

**42. Greece in the Fifth Century B.C.** An intensive study, chiefly on the basis of primary sources, of Athens and the Greek world from the reforms of Cleisthenes to the end of the Peloponnesian War. Special emphasis is placed on the political, social, and economic institutions of the Athenian democracy and on the problems of the Delian League, both internal and in its relation to the Greek and non-Greek world. Classics 42 counts towards a major in History.

The course is normally given in alternate years.

Prerequisite: Classics 31 or its equivalent.

*Spring semester, 1976.* Mr. Ostwald.

**44. The Roman Empire.** A detailed study, using primary sources, of the political, economic, social, and cultural history of the Roman world from the death of Nero in A.D. 68 to the death of Constantine in A.D. 337. Classics 44 counts towards a major in History.

Prerequisite: Classics 32 or its equivalent.

*Spring semester.* Mr. Mitchell.

**46. An Introduction to Archaeology.** This course imparts a knowledge of techniques and procedures applicable to archaeological study in any part of the world. Specific examples and problems are drawn in the main from classical archaeology, with emphasis on a particular period (e.g. Bronze Age, Hellenistic, Etruscan, etc.).

Staff.

**81. Colloquium on the Ancient Theatre.** All extant examples of Greek and Roman drama (both tragedy and comedy) will be read in translation, and there will be a study of ancient dramatic production and the physical remains of Greek and Roman theatres. There is no prerequisite, but preference will be given to students who have had some previous acquaintance with dramatic literature, or have taken Classics 33 or 35.

*Spring semester, 1975.* Mr. Tompkins.

**82. Colloquium on Roman Political Theory.** Working from the writings of Polybius, Cicero, and the Roman Historians, the Colloquium will examine the political thinking which inspired the institutions of the Roman Republic and the forces and changing ideas which caused this system to collapse at the peak of Rome's prosperity and to give way to autocracy.

*Fall semester.* Mr. Mitchell.

HONORS SEMINARS

**102. Roman Historians.** This seminar combines a survey of Latin historical writing to the end of the Silver Age with intensive study of selected books of Livy and Tacitus, both as examples of Roman historiography and as sources for Roman history.

*Spring semester.* Mr. Mitchell.

**103. Latin Epic.** This seminar traces the development of Roman epic poetry, with particular emphasis on the *De Rerum Natura* of Lucretius and the *Aeneid* of Virgil. Some attention is also given to early Roman epic, as represented by the *Annales* of Ennius, and to the later epic, typified by Lucan's *Pharsalia.*

*Spring semester.* Staff.

**104. Juvenal and Tacitus.** A study of the Satires of Juvenal and the Annals of Tacitus. Special attention is given to the writings of both authors as illustrations of the social structure and of the literary and artistic movements of the early empire.

*Fall semester, 1975.* Staff.

**105. Cicero.** A study of the political and forensic speeches of Cicero and of his personal correspondence as sources for the political and constitutional history of the final years of the Roman Republic. Attention is also paid to Ciceronian prose style as exemplified in his letters and orations.

*Fall semester, 1974.* Mr. Mitchell.

**107. Horace: Lyric and Hexameter Poetry.** The seminar emphasizes the *Odes* and *Epodes* and their place in the tradition of Greek and Roman lyric poetry. Attention is also given to the *Satires* and *Epistles,* especially the *Ars*

*Poetica,* and to their importance for the history of satire and literary criticism. An effort is made to grasp the totality of Horace's achievement in the context of the Augustan Age.

*Spring semester, 1975.* Miss North.

**111. Greek Philosophers.** This seminar is devoted mainly to the study of Plato, which is supplemented by study of the pre-Socratic philosophers and of Aristotle and the Hellenistic schools. The orientation of the seminar is primarily philosophical, although the literary merits of the Greek philosophers receive consideration.

*Fall semester, 1975.* Mr. Rose.

**112. Greek Epic.** The study of Homer's *Iliad* or *Odyssey* constitutes the chief work of this seminar. Some attention is also paid to Hesiod's *Theogony* and to the *Argonautica* of Apollonius of Rhodes.

*Spring semester, 1975.* Mr. Tompkins.

**113. Greek Historians.** This seminar is devoted to a study of Herodotus and Thucydides, both as examples of Greek historiography and as sources of Greek history.

*Fall semester, 1974.* Mr. Meiggs.

**114. Greek Drama.** The whole body of extant Greek tragedies and comedies is studied, with a careful reading in the original language of one play by each of the major dramatists.

*Spring semester, 1976.* Mr. Rose.

**115. Greek Elegiac and Lyric Poetry.** The whole body of extant Greek elegy and lyric is studied, with attention to the political and social background, and to the relation of these literary types to epic and dramatic poetry.

*Fall semester.* Miss North.

# ECONOMICS

EDWARD K. CRATSLEY, *Professor*
FRANK C. PIERSON, *Professor and Chairman*
SIDNEY POLLARD, *Cornell Visiting Professor*††
FREDERIC L. PRYOR, *Professor*
BERNARD SAFFRAN, *Professor*
ROBINSON G. HOLLISTER, JR., *Associate Professor*‡ *(part time)*
VAN DOORN OOMS, *Associate Professor*
HOWARD PACK, *Associate Professor*‡
PETER KEMPER, *Assistant Professor*
WILLIAM J. STULL, *Assistant Professor*†
MARCIA J. KRAMER, *Lecturer (part time)*

The courses in economics are designed: first, to acquaint the student with the institutions and processes through which the business of producing, exchanging, and distributing goods and services is organized and carried on; second, to train him in the methods by which these institutions and processes may be analyzed; and third, to enable him to arrive at informed judgments concerning relevant issues of public policy.

†Absent on leave, spring semester, 1975.
‡Absent on leave, 1974-75.
††Spring semester, 1974-75.

Course 1-2A is prerequisite to all other work in the department except Economics 3 and Economics 4. All students intending to major in Economics are strongly advised to take Economics 4 in order to prepare for upper level courses and seminars. While not essential, college-level mathematics would also be helpful. Students intending to do graduate work in Economics should acquire a strong background in mathematics. Majors in Course are advised to take Economics 20 and (in their senior year) Economics 59. Majors in Honors are required to take Economics 103. Students intending advanced work in applied economics and those intending to go to law school or business school, will find Economics 3 (Accounting) useful preparation.

Course 1-2A is prerequisite to all other work in the department except course 3 (Accounting). All students intending to major in economics are strongly advised to take Economics 4 (Statistics for Economists) in order to prepare for upper level courses and seminars. While not essential, college-level mathematics would also be helpful. Students intending to do graduate work in economics should also take Mathematics 5, 6, 11, and, if possible, 15 and 22. Majors in Course are required to take course 20 and (in their senior year) Economics 59. Majors in Honors are advised to take seminars 103 and either 101 or 102. Students intending advanced work in applied economics and those intending to go to law school or business school, will find Economics 3 (Accounting) useful preparation.

**1-2A. Introduction to Economics.** This course, which is 1½ semesters in length, is designed both to afford the general student a comprehensive survey and to provide students doing further work with a foundation on which to build. It describes the organization of the economic system and analyzes the allocation of resources, the distribution of income, the maintenance of economic stability, and international economic relations. On completing the course, students will have the option of joining seminars in Economics 2B for one-half course credit during the last half of the semester.

Staff.

**2B. Contemporary Issues in Economics.** This course, which is one-half semester in length, is normally taken by students immediately after completion of Economics 1-2A. However, these half-semester seminars may also be taken in later years by students who have taken Economics 1-2A. Each student may elect to join a seminar which meets weekly for intensive investigation, thorough reading, written reports and discussion, of a contemporary economic topic or problem. Recent topics covered by these seminars have included Mathematical Economics, Macroeconomic Models and Computer Simulation, National Priorities and Post-Vietnam Planning. Economics of Tax Reform, Marxist Political Economy, Economics of Discrimination, Environmental Economics, and the Political Economy of the Multinational Corporation.

**3. Accounting.** The purpose of this course is to equip the student with the rudiments of accounting needed for advanced work in business finance, banking, taxation, and public regulation. (This course does not satisfy the distribution requirement as outlined on page 60.)

*Spring semester.* Mr. Cratsley.

**4. Statistics for Economists.** (Also listed as Mathematics 1). Economics students taking this course (including all majors) will meet in a special section for the second half of the semester after taking the first half of the general statistics course. The objective of this section will be to provide the student with a basic understanding of simple and multiple regression analysis.

*Fall semester.* Mr. Iversen and Mr. Stull.

**11. Economic Development.** Requisites for the economic development of underdeveloped countries. Obstacles to development. Strategy and tactics of development policy.

*Spring semester.* Mr. Ooms.

**12. The Industrial Revolution in Great Britain.** (May be taken for credit in History.) A discussion of the causes and preconditions of the successful industrialization of Great Britain in the period c. 1770—c. 1850 which became the threshold of the modern age for the whole world. The course will examine technological, organizational, and economic changes in agriculture, manufacturing, transport, and other sectors, together with the accompanying changes in financial institutions, in overseas trade, and the organization, ownership, and management of firms. (For fuller description of the course, inquire of the Department of Economics.)

*Spring semester.* Mr. Pollard.

**20. Economic Theory.** Determination of prices in theory and in practice. Distribution of income. Economic welfare aspects of various market structures.

*Fall semester.* Mr. Kemper.

**21. Industrial Organization and Public Policy.** Optimality and the price system; theories of the firm; market structure; the causes of market failure and alternative policy responses; nonmarket allocation of resources; application of analytic tools to selected sectors (e.g. the defense, airline, education, and television sectors) with emphasis on public policy alternatives.

*Spring semester.* Mr. Kemper.

**22. Finance.** The application of the tools of economic analysis to the revenue and expenditure policies of the government, firm, and household. For the government sector the discussion will focus on the role of cost-benefit analysis in government expenditures as well as the problems of incidence and reform of the tax system. Optional investment strategies and corporate finance will be the primary concerns of the study of the firm, while for the analysis of the consumer the material will concentrate on tax and investment strategies.

*Spring semester.* Mr. Saffran.

**23. Econometrics. (Course offered at Bryn Mawr College. Economics 302b.)** A six-week survey of the theory of multiple regression and the problems encountered in using multiple regression in economic analysis. This will be followed by individual empirical research projects on economic topics selected by students. Admission by permission of the instructor.

*Spring semester.* Mrs. Hunter.

**25. Labor Problems and Manpower Policy.** The structure and behavior of labor markets, issues in labor relations, the development of manpower, the role of unions, employers and government.

*Fall semester.* Mr. Pierson.

**26. Social Economics.** The extent, consequences, and causes of poverty and economic inequality; an appraisal of reforms in income support programs, medical care, education, housing, and rural and ghetto development; the economics of discrimination.

*Fall semester. Not offered in 1974-75.* Mr. Hollister.

**30. The International Economy.** After a brief introduction to the historical development and institutional structure of the world economy, students will examine the bases of national and international economic interests and the contemporary problems in international trade and finance to which these give rise. Particular attention will be paid to national policies (especially those of

the United States) and the pursuit of international agreements as responses to these problems.

*Fall semester.* Mr. Ooms.

**31. Comparative Economic Systems.** Analysis of methods by which economic systems can be compared; studies of empirical comparisons according to many criteria of nations in East and West; case studies of the Soviet Union, China, Yugoslavia and other nations.

*Fall semester.* Mr. Pryor.

**41. Urban Economics.** This course examines the economic structure and development of American urban economies. Topics covered include housing, transportation, urban renewal, local government finance, and pollution.

*Fall semester.* Mr. Stull.

**47. Marxist Political Economy.** A study of Marxist economics and political theory with particular attention to general problems of historical materialism. Primary emphasis in the reading is placed on the works of Marx, Engels, and Lenin; however, some time is also devoted to the background of Marxist thought as well as the development of Marxist theory in the present era. Prerequisites include two semesters of either Political Science or Economics.

*Spring semester.* Offered in 1975 as Economics 2-B seminar, with Economics 1-2A as prerequisites.

**56. Operations Research.** (Also listed as Engineering 56.) The principles of operations research as applicable to defining optimum solutions of engineering and financial problems as an aid to managerial decision making. Probability and probability distributions, reliability, random number simulation, queuing theory, linear programming, dynamic programming, allocation and transportation theory. The working principles of engineering economy are introduced and combined with operations research topics.

Three class periods each week.

Normally for junior and senior students.

*Spring semester.*

**58. Health Policy.** (Also listed as Political Science 58.) Analysis of government policy toward health care and public health, its impact upon institutions and resource allocation, and major alternatives for action. Central topics are the organization of health care delivery (roles and views of physicians, nurses, administrators, patients and insurers); the interplay of federal, state, and local governments, quasi-public authorities, and interest groups; technical and political aspects of health insurance alternatives; health manpower (medical and nursing schools, para-professionals); biomedical research programs. Students wishing to take this course should consult in advance with the instructors. Prior work in at least two of the following will be helpful: Economics 1-2,4,26; Political Science 2,51; Mathematics 1; Engineering 7,8,31,32.

*Spring semester. Not offered in 1974-75.* Mr. Hollister and Mr. Smith.

**59. Economic Stability.** National income theory. The role of money and financial institutions. Analysis of business fluctuations and long-term economic change. Public policies for stabilization and growth.

*Spring semester.* Mr. Pierson.

**70. The Political Economy of Communist Systems.** (Also listed as Political Science 70.) A single-credit colloquium analyzing the interaction between economics and politics in Communist countries. Case study material will be drawn from several East European countries, the USSR, and China. Prerequisite: at least one introductory course in either economics or politics. [Double-credit option will be available.]

*Fall semester. Not offered in 1974-75.* Mr. Lieberthal and Mr. Pryor.

## ECONOMICS

### Honors Seminars

**101. Public Finance.** Income distribution analysis of public expenditures, effect of expenditures and taxation on resource allocation and income distribution, national debt.
*Fall semester.* Mr. Saffran.

**102. Economic Stability and Growth.** The theory of cyclical fluctuations and secular growth. Money and banking. Monetary and fiscal policy. Wage-price pressures and the control of inflation.
*Spring semester.* Mr. Pierson.

**103. Economic Theory.** Contemporary theory: price determination, the functional distribution of income, the level of employment. Evaluation of theory in the light of simplifying assumptions and empirical evidence. The relevance of theory to socio-economic problems.
*Each semester.* Mr. Saffran.

**105. International Economics.** Theory and practice in international economic relations. The pure theory of international trade. The balance of payments and the mechanism of international exchange. Restrictionism and discrimination. Regionalism. Relations with controlled economies. International investment and foreign aid.
*Fall semester.* Mr. Ooms.

**106. Comparative Economic Systems.** Analysis of methods by which economic systems can be compared; study of resource allocation and growth in socialist, capitalist, and mixed economies; case studies of the U.S.S.R., Yugoslavia, China, France, and other nations; examination of special problems in economic planning.
*Fall semester.* Mr. Pryor.

**107. Labor and Social Economics.** Economic analysis of the organization of labor and labor markets; education, medical care, housing, discrimination. Determinates of wages and income inequality, government policies with respect to labor relations, health, education and welfare.
*Fall semester.* Mr. Hollister and Mr. Pierson.

**108. Econometrics.** Econometric theory and empirical studies. An empirical research paper is required.
Prerequisites: Mathematics 11 and Economics 103.
*Spring semester.* Mr. Saffran.

**109. Economic Development.** An examination of the problems of economic development and growth in low-income countries, with attention to both historical experience and current issues of development policy. Techniques of economic planning and instruments of policy will be studied. Emphasis will be placed upon case studies of individual countries, and each student will prepare a research paper in considerable depth.
*Spring semester.* Mr. Ooms.

**110. Urban Economics.** This seminar will deal in depth with the structure and development of American urban economies. Topics covered will include housing, transportation, urban renewal, local government finance, and pollution. Methodological as well as substantive issues will be discussed.
*Fall semester.* Mr. Stull.

**111. Industrial Organization and Public Policy.** Applications of theoretical and empirical analysis to major issues in industrial economics: optimality and the price system; theories of the firm; market structure; the causes of market failure and alternative policy responses; nonmarket allocation of resources; application of analytic tools to selected sectors (e.g. the defense, airline, education, and television sectors) with emphasis on public policy alternatives.
*Spring semester.* Mr. Kemper.

**112. Twentieth Century Britain in the World Economy.** (May be taken for credit in History.) The years before 1914 marked the peak of Britain's particular contribution to the growth of the world economy: a high level of foreign investment, a crucial role in world commerce based on free trade in Britain, and the successful management of a classic gold standard with London as its international centre. However, since then, despite investment in new industries and the creation of a modern industrial base during the 1930's and the second World War, Britain has fallen behind industrially, and the slow growth rate of the past quarter century has had widespread economic and social consequences. (For a fuller description of the seminar, inquire of the Department of Economics.)
*Spring semester.* Mr. Pollard.

# EDUCATION

ALICE K. BRODHEAD, *Associate Professor and Program Director*
FRANCES SCHWARTZ, *Assistant Professor and Lecturer in Anthropology*

There is no major in Education. Swarthmore students may qualify for the Instructional I Certificate for secondary school teachers in Pennsylvania (valid in a number of other states) by taking a pre-professional sequence together with a major or appropriate concentration in one or more of the following fields: Biology, Chemistry, Comprehensive English, Comprehensive Social Studies, French, German, Latin, Mathematics, Physics-Mathematics, Russian, and Spanish. Comprehensive Social Studies may embrace Economics, History, Political Science, Psychology, or Sociology-Anthropology. Students are referred to the pertinent department and to the Program in Education for further information and counsel concerning specific requirements for certification in each field. Normally students will be certified only on the basis of courses taken at Swarthmore College or work taken elsewhere which is acceptable to the corresponding department at Swarthmore. Students will apply to the Teacher Education Committee for the Instructional I Certificate for Secondary Teaching in a given subject, and such application must normally be made prior to graduation.

From among the courses offered solely in the Program in Education, a maximum of four credits may be included in the College graduation requirement of 32. Courses in Education are not only for students seeking certification, but such students should pursue the following program if they wish to obtain the Instructional I Certificate for Secondary Teaching:

Education 14. Introduction to Teaching
Psychology 2. Psychology of Human Relations
*Either* Psychology 39, Child Psychology *or*
Sociology-Anthropology 24, Psychological Anthropology
Education 16. Practice Teaching
At least one additional course from the following:
Education 17. Problems in Urban Education
Education 37. Education in America
Education 45. Anthropology and Education
Education 55. Research in Anthropology and Education
Education 75. Education and Society
Education 91. Special Topics

Since the fall of 1973, a joint program for preparing elementary teachers has been experimentally carried on by Swarthmore College and Bryn Mawr

College together. Bryn Mawr College has requested program approval for certification by the Pennsylvania Department of Education during 1974-75, and Swarthmore College will make a decision during 1974 on joining in that request.

The courses listed below are all pertinent to teaching in an elementary school, but a program of preparation is built individually. Students who are interested should consult a member of the Program in Education teaching staff.

| | |
|---|---|
| Education 14. | Introduction to Teaching |
| Education 16. | Practice Teaching |
| Psychology 3. | Introduction to Psychology |
| Psychology 39. | Child Psychology |
| Education 201a. | Educational Psychology |
| Education 303b. | Developmental and Remedial Reading |
| Education 9. | Foundations of Mathematics |

**9. Mathematics for Elementary Teachers** (also listed as Mathematics 9). This course is designed to introduce prospective elementary school teachers to some of the available mathematics curriculum materials, and to solidify their understanding of the underlying mathematics. Permission of the Mathematics Department is required unless the student has successfully completed a mathematics course in college.
*Fall semester.* Mr. Rosen.

**14. Introduction to Teaching.** An exploratory course designed to help students to determine their own interest in preparing to teach as well as to furnish them with opportunities for learning about elementary and secondary schools. Current educational theory will be discussed and compared with contemporary practice. Field work in schools is required.
*Each semester.* Ms. Brodhead and Ms. Schwartz.

**16. Practice Teaching.** Supervised teaching in either secondary or elementary schools, with an accompanying seminar for methods and materials. Double credit.
*Each semester.* Staff.

**17. Problems in Urban Education.** This course considers the problems of schools in big cities, related to topics such as financial support, community relations, professional staff, curricular innovation, pupil personnel. A weekly seminar, individual study, and field investigation are required.
*Spring semester.* Ms. Brodhead.

**37. Education in America** (also listed as History 37). A history of primary, secondary, and higher education in America from the European and colonial origins to the present. The course will consider both theory and practice within the context of American society and culture, and in relation to other agencies of socialization.
History prerequisite: the usual exemption for seniors is extended to juniors in the Program in Education.
*Not offered 1974-75.* Mr. Bannister or Mr. Wood.

**45. Anthropology and Education** (also listed as Sociology-Anthropology 45). Anthropological perspectives on social process in formal and informal learning situations both cross-culturally and within United States subcultures. The course will explore the dynamics of classroom interaction, the school as a social system, the school in relation to the community, value and role conflicts in eduction as agents of social change, and modes of intentional and unintentional socialization.
*Not offered 1974-75.* Ms. Schwartz.

**55. Research in Anthropology and Education** (also listed as Sociology-Anthropology 55). Focus on student field work in neighboring school and community. Application of anthropological research methods to an actual educational institution. Exploration of the impact of research for school personnel in educational planning and community relations.
Prerequisite: permission of the instructor.
*Spring semester.* Ms. Schwartz.

**75. Education and Society** (also listed as Sociology-Anthropology 47.) Comparative study of the functions of schools from the perspective of sociology and anthropology. Among the topics to be discussed are the relations of educational institutions to other sectors of society, and the question of alternatives to schooling in both modernizing and "post-industrial" societies.
*Fall semester.* Mr. Bramson.

**91. Special Topics.** With the permission of the instructor, qualified students may choose to pursue under supervision and direction a topic of special interest which for thorough investigation will usually require field work as well as reading.
*Each semester.* Staff.

**201a. Educational Psychology** (to be given at Bryn Mawr). Psychology and measurement related to educational objectives particularly from the point of view of what is currently known about human social, affective, cognitive and learning behavior. Laboratory work is required.
Prerequisite: an introductory course in Psychology.
*Fall semester.* Ms. Riser.

**303b. Developmental and Remedial Reading** (to be given at Bryn Mawr). Basic principles and approaches to teaching reading. Developmental reading progress of children will be studied, as well as how to recognize and evaluate deviation from the norm. Weekly tutoring experience required.
*Spring semester.* Ms. Riser.

# ENGINEERING

CARL BARUS, *Professor*
DAVID L. BOWLER, *Professor*
SAMUEL T. CARPENTER, *Professor*
H. SEARL DUNN, *Professor and Chairman*
JOHN D. McCRUMM, *Professor*
BERNARD MORRILL, *Professor*
M. JOSEPH WILLIS, *Professor*
WILLIAM L. HSU, *Assistant Professor*
H. ALAN HUME, *Lecturer*

The Department of Engineering offers engineering programs directed toward four principal educational aims: to introduce the student to a body of knowledge fundamental to all of modern engineering; to provide him with a comprehensive background in the basic sciences; to allow him maximum flexibility in electing plans of study to suit individual objectives; to provide him the opportunity to study in the humanities and social sciences. The overall plan leading to a degree of Bachelor of Science with the major in engineering is accredited by the Engineers' Council for Professional Development.

The professional practice of engineering requires skill and resourcefulness in applying scientific knowledge and methods to the solution of engineering prob-

lems of ever growing technical complexity. In addition, the role of engineers in our society demands that the engineer recognize and take into account the economic and social factors that bear on his technical problems. The successful engineer will therefore possess an understanding of socio-economic forces, an appreciation of the cultural and humanistic aspects of the society in which he lives, and a sound working knowledge of human relations. Our total program furthers these objectives by providing the student with a broad technical knowledge, together with the foundation of a liberal education. There is an increasing tendency for students to major in engineering when their career plans are in a different field. It is possible to carry a dual major, one of which is in engineering. Thus, students who are particularly interested in careers which spring from a discipline in the social sciences can simultaneously prepare themselves in areas of technology pertinent to their future plans.

Courses in the Department of Engineering are open to all students who have the interest and the prerequisite background. Special inquiries may be made through the chairman of the department. Courses 1, 2, 7, 8, 22, 23, 56 and 67 may be especially relevant to some student programs.

The use of the College's computer facilities is central to an engineering education at Swarthmore. The Department has developed a number of courses dealing with computers which would be of interest to students in all departments of the College. These include introductory courses in computer science with both non-numeric and scientific programming, and advanced courses in systems programming. (Courses 22, 23, 24, 26).

Educational plans available to engineering students at Swarthmore are as follows:

(1) Four year course programs with the major in engineering, with elected concentrations of study in the professional branches of engineering such as Civil, Electrical, and Mechanical Engineering, and related engineering areas.

(2) Four year course programs with the major in engineering, with elected combinations of study in Biology, Chemistry, Economics, Mathematics, Political Science, etc.

(3) Four-year and five-year Course programs leading to a double major and two degrees; the B.S. degree in engineering and the B.A. degree in a second academic area.

A candidate for a degree in engineering must meet the general requirements of the College as well as the requirements of the Department of Engineering. Curricular plans for the first two years must take two objectives into consideration: (1) courses should provide an adequate background for work in engineering at the upperclass level, and (2) the satisfying of the general College requirements. During the second semester of the sophomore year the student, following College procedure, will apply for a major in engineering. All four-year programs lead to the degree of Bachelor of Science with the major in engineering.

*Course Program*

The prerequisites for a major in engineering are Engineering 1 and 2 in the first year and Engineering 11 and 12 in the second year. Prospective engineering majors are strongly urged to enroll in appropriate courses in Chemistry, Physics, and Mathematics. In special cases, students with preparation comparable to, but differing from, Engineering 1, 2, and 11 may apply to major in engineering after consultation with the Department chairman.

The departmental requirements beyond those indicated above for the degree of Bachelor of Science with a major in engineering fall into two categories: (1) satisfactory completion of the following courses which are required of all engineering students: Introduction to Fields & Continua, Thermodynamics, and

Engineering Materials; (2) satisfactory completion of an approved program of at least four additional advanced engineering courses, normally elected from those numbered 23 or higher. Students applying to major in engineering must submit their programs for approval to the Department of Engineering.

*Course Advising*

Students are advised to make their educational goals known to their advisers at the earliest possible time. In this way the student can best benefit from the flexibility provided for course election and provide for a curricular program specifically oriented to his future educational goals.

*Elective Plans in the Course Program*

The following suggested plans of study for the last two years are listed to indicate the flexibility of choice open to the student. Other plans may also be arranged beyond those suggested. At least four elected and approved advanced courses in engineering must be included in the program of the junior and senior years. Electives in the humanities, social sciences and life sciences can also contribute, in many cases, to the central educational aims. A course in Special Topics or a Thesis is available for meeting special interests or needs.

## Some Typical Elective Plans

### Bio-Engineering

Engineering courses with additional elections in Engineering, Biology, and Chemistry.

The application of engineering principles to biological and medical problems. Students with this interest will normally elect two semesters of biology and two semesters of organic chemistry, and an appropriate sequence of engineering courses.

### Civil Engineering and Related Areas

General Civil Engineering
Structures
Urban and Regional Planning
Environmental Engineering

The suggested course program is Mechanics of Solids, Structural Mechanics I, Soil Mechanics, Civil Engineering Design, with a fifth course chosen from Fluid Mechanics or Structural Mechanics II. The sequence provides the prerequisites for an additional elective sequence in structures, water resources and planning, pre-architecture, or general civil engineering.

The early planning of electives in art, biology, economics, political science, or sociology, is essential for programs related to urban and regional planning or water resources.

### Electrical Engineering and Related Areas

General Electrical Engineering
Electronics and Information Processing
Systems and Control
Electric Power and Energy Conversion
Engineering Physics

Students who plan to do work in electrical engineering will normally include the following courses in their programs: Circuit Theory, Electromagnetic Theory, Electronic Circuit Theory I (73).

The program should be filled out with additional courses selected partly from those numbered 55 and 74 to 80, inclusive, according to individual interest. The full program may emphasize an area of study such as those listed at the left.

# ENGINEERING

## Engineering Sciences

A number of feasible programs may be elected from Engineering, Mathematics, Chemistry, Physics, with the engineering courses dealing primarily with the theoretical bodies of knowledge.

A program in Engineering Sciences provides for diversity and depth in engineering, combined with mathematics, chemistry, or physics. It is suitable for those planning to enter college teaching or engineering research after graduate study.

## Engineering Combined With Study in Other College Areas

Biology
Economics
Mathematics
Political Science
Psychology
Sociology

An engineering student is required to include at least four approved engineering courses beyond the required engineering core. Fourteen electives, including the six to satisfy the College distribution requirements, are available for planning a sequence of study leading to concentrations or diversity in other College areas. The areas listed on the left are not exclusive but they do represent areas in which engineering students may find a strong interest and a relationship to future engineering work.

## Mechanical Engineering and Related Areas

General Mechanical Engineering
Applied Mechanics
Thermodynamics and Energy Conversion
Fluid Mechanics and Heat Transfer
Engineering Design

Sequences in general mechanical engineering will normally include, in addition to the required engineering core, courses in advanced dynamics, solid mechanics, fluid mechanics and heat transfer, and automatic controls. Courses in thermodynamics, applied mechanics, fluids, heat transfer, and engineering design can be used to develop such specialized sequences as those shown at the left.

## Engineering

**1. Introduction to Engineering.** The use of the digital computer is introduced and engineering problems are assigned for computer solution. Concepts of engineering design with individual design projects and the methodology of operations research such as linear programming, transportation problems, reliability, and Monte Carlo simulations, are developed. During the last four to five weeks of the course, students are assigned to small seminar groups directed by engineering faculty and covering various current engineering topics. The laboratory work introduces graphical concepts and some shop practice.

Three class periods and a laboratory each week.

*Fall semester.*

**2. Mechanics.** Fundamental areas of statics and dynamics. Elementary concepts of deformable bodies including stress-strain relations, beam, torsion, and long column theory. Laboratory work is related to experiments on deformable bodies and a spring field engineering project is generally scheduled during laboratory periods.

Three class periods and a laboratory each week.

*Spring semester.*

**7, 8. Problems in Technology.** Designed primarily for those not planning to major in science or engineering, this course is intended to provide some depth of understanding of technology and its impact by examining one or two selected areas each semester. The scientific basis and engineering design principles of the technology under study will be emphasized. The technological problems studied will shift from year to year, depending on the instructor's areas of competence and the timeliness of issues in various technical fields; for example, biomedical engineering, data processing, environmental engineering, communications, transportation, energy.

A strong background in high-school mathematics is assumed.

Three class periods and a laboratory every other week.

**11. Electrical Science.** Discussion of problems involving static electric and magnetic fields such as properties of dielectrics, magnetic circuits and applications of the Lorentz force equation. Development of Maxwell's equations in integral form. Kirchoff's Laws and the v-i relations for passive elements R, L and C are used to formulate the equations describing the behavior of electric circuits. Circuits of increasing complexity are studied, as time permits, through solution of the equations. Use of the analog computer and ideas of measurement and instrumentation are among the subjects introduced in the laboratory.

Three class periods per week and a laboratory every other week.

Prerequisite: To be preceded or accompanied by integral calculus.

*Fall semester.*

**12. Physical Systems Analysis.** The study of physical phenomena and systems which may be represented to a good degree of approximation by a linear model or a lumped-parameter pictorial model. The formulation of the mathematical model from basic physical laws and the treatment of the ordinary differential equations resulting therefrom. Emphasis will be placed upon the unity resulting from the mathematical representation for many types of physical systems: mechanical, electrical, electromechanical, thermal, etc. Techniques of analysis will include classical solution of differential equations including power series solutions, and also solution by Laplace transform methods. Transient and steady state response, frequency response, pole-zero concepts, notions of stability, and energy considerations. The analog computer will be used extensively.

Three class periods and a laboratory every other week.

Prerequisite: Engr. 11, or equivalent.

*Spring semester.*

**22. Scientific Programming.** Deals with aspects of computer programming which are of particular interest to students of the sciences and engineering. Following an introduction to the Fortran IV language, the remainder of the course will be concerned with applications such as matrix manipulations, numerical integration and the solution of non-linear problems. No previous experience in programming will be necessary.

Three class periods per week.

Prerequisite: A background in mathematics which includes calculus and preferably some exposure to simple differential equations.

*Spring semester.*

**23. Digital Computers.** An introduction to information structures and the programming of digital computers. Languages taught will be Fortran IV and an assembly language. Topics in information structures will include stacks,

queues, trees, and linked lists with applications to the processing of non-numeric data (character strings). There will be extensive use of the College's computer facilities.

No prerequisites.

*Fall semester.*

**24. Systems Programming.** An introduction to the design of systems programs for digital computers—assemblers, compilers, loaders, utilities, and executives. Particular topics include macro processors, I/O handling, and dynamic storage allocation.

Prerequisite: Engr. 23 or consent of instructor.

*Spring semester.*

**26. Compiler Construction.** Each student will design and code a simple compiler (translator) for a digital computer. Lectures will cover artificial languages and grammars, scanners, syntax recognizers, semantic routines, and code generation.

Prerequisite: Engr. 23 or consent of instructor.

*Spring semester.*

**31, 32. Superproblem in Public Technology.** An interdisciplinary group project examining a particular public-service technology including its associated environmental and social problems. The project's goal—i.e., the "superproblem" —is to formulate technical, social and regulatory policies likely to educe net long-term social benefit from the technology in question and minimize social and environmental harm. Examples of such technologies are transportation, electric power, communications, housing, waste disposal-recycling, water supply, and the like.

Credit will be given for a single semester. However, work on a given superproblem is expected to continue for a full year or more, and students are encouraged to stay with a project as long as possible. It is hoped that funds will be available each summer to support a small study group working on the current project. The course is open to all students.

**35. Biomedical Engineering.** A practical course which integrates physiology and engineering with clinical applications. Specific topics may include: electronic pacemakers; control of circulation; kidney function and dialysis techniques; the mechanism of immunology and transplantations of organs; bioengineering materials; gas exchange and nervous control in respiration. The lectures will be augmented by contributions from outside practicing experts. Participation in clinical applications and practice is part of the laboratory requirement.

Three class periods and an independent laboratory each week.

Normally for junior and senior students.

*Fall semester.*

**51. Introduction to Fields and Continua.** Analysis of field phenomena in a variety of continuous media. Fluid-flow, elastic, thermal, electromagnetic, and other fields are treated with emphasis on their common properties. The partial differential equations governing time-invariant fields, diffusion, wave motion, etc., are developed from basic principles. Application is made to realistic engineering situations.

Three class periods and a laboratory each week.

Prerequisite: Engr. 12, or equivalent.

*Fall semester.*

**53. Thermodynamics.** Thermodynamic concepts are introduced by using macroscopic and statistical models. The first law is stated in terms of work and heat. The second law is approached from a statistical point of view. The statistical inference of thermodynamics with respect to entropy and equilibrium is introduced. Emphasis is placed on the mathematical description of properties by using the partition function as the kernel of thermodynamic information.

Three class periods and a laboratory each week.

*Fall semester.*

**55. Systems Theory.** Mathematical analysis of an assemblage of interacting elements composing a generalized system. Fourier methods and the Laplace transform. State variables, the system state transition matrix and canonical forms. Probabilistic systems analysis and decision theory. Response to random inputs. Correlation functions and spectral distribution. Some applications in the socio-economic and urban systems domain.

Three class periods each week; conference or laboratory every other week.

Prerequisite: Engr. 12, or equivalent.

*Spring semester.*

**56. Operations Research.** (Also listed as Economics 56.). The principles of operations research as applicable to defining optimum solutions of engineering and financial problems as an aid to managerial decision making. Probability and probability distributions, reliability, random number simulation, queuing theory, linear programming, dynamic programming, allocation and transportation theory. The working principles of engineering economy are introduced and combined with operations research topics.

Three class periods each week.

Normally for junior and senior students.

*Spring semester.*

**60. Engineering Materials.** Response of materials in a biological, chemical, electrical, mechanical, optical, and thermal environment, in terms of microscopic fundamentals. Design of self-disintegrating materials. Emphasis is on the design, modes of thought, techniques, concepts, and problems of today.

Three class periods and a laboratory every other week.

Prerequisite: Permission of instructor.

*Spring semester.*

**91. Special Topics.** Subject matter dependent on a group need or individual interest. Normally restricted to senior students and offered only when staff interests and availability make it practicable to do so.

**96. Thesis.** With approval, a student may undertake a thesis project as a part of his program in the senior year. The student is expected to submit a prospectus of his thesis problem before the start of the semester in which the thesis project is carried out.

### Civil Engineering

**59. Mechanics of Solids.** This course deals with the internal stresses and changes of form when forces act on solid bodies. State of stress and strain, strength theories, stability, deflections, and photoelasticity. Elastic and Plastic theories.

Three class periods and a laboratory each week.

Prerequisite: Engr. 2, or equivalent.

*Fall semester.*

**62. Structural Mechanics I.** Principles of structural systems and mechanics of deformable bodies pertaining to deflection and stability. Structural mechanics of space and plane framed structures including stress analysis, and deflections of determinate and indeterminate structures.

Three class periods and a laboratory each week.

Prerequisite: Engr. 59.

*Spring semester.*

**63. Structural Mechanics II.** A study of statically indeterminate structural systems and advanced structural theory. Force and displacement methods with matrix applications. Digital computer applications.

Three class periods and a laboratory each week.

Prerequisite: Engr. 62.

*Fall semester.*

**64. Soil Mechanics.** Using the basic concepts of physical geology as a unifying framework, the principles of soil mechanics are studied. Subjects introduced include formation of soils, clay mineralogy, transport and deposition of soils, soil type identification, consolidation theory, flow through porous media, stresses in earth masses, and slope stability.

Three class periods and a laboratory each week.

*Spring semester.*

**65. Civil Engineering Design.** An introduction to the design of civil engineering works with emphasis on structural components and structural materials; design projects involving planning, analysis and synthesis, culminating in a design project by the entire class.

Three class periods and a laboratory each week.

*Fall semester.*

**66. Structural Design.** An advanced course in the design of structures dealing with stability, flat plates, shells, pre-stressed concrete, high strength steels, ultimate design, dynamic force systems, comprehensive design problems, advanced structural model studies.

Three class periods and a laboratory each week.

Prerequisites: Engr. 59, 62, 63, 65.

*Spring semester.*

**67. Environmental Engineering.** An introduction to the fundamentals of applied ecology in water resources engineering, with emphasis on pertinent areas of hydrology, hydraulics, and water quality. Fundamentals are related to stream quality management and planning for water resources projects, by means of student projects on a local drainage basin.

Three class periods and a laboratory each week.

Prerequisite: A course in biology, chemistry, physics, or engineering.

*Spring semester.*

### ELECTRICAL ENGINEERING

**71. Circuit Theory.** Transient and steady-state analysis of electric circuits and networks with emphasis on state variable as well as classical methods and s-plane interpretation. Network topology, equilibrium equations, theorems, network functions and their properties. Energy in electric networks. Matrix formulation for the systematic representation of generalized networks for computer analysis. Linear, nonlinear, time-varying and time-invariant cases. Extensive use of the digital computer.

Three class periods and a laboratory each week.
Prerequisites: Engr. 12, or Physics 12.
*Fall semester.*

**72. Electromagnetic Theory.** Application of Maxwell's equations. Macroscopic field treatment of magnetic, dielectric and conducting bodies. Forces, motion and energy storage. Field basis of circuit theory. Electromagnetic waves; wave-guides, transmission lines, and antennas.
Three class periods and a laboratory each week.
Prerequisite: Engr. 51, or equivalent.
*Spring semester.*

**73, 74. Electronic Circuit Theory.** The principal emphasis of the course is on the use of transistors as active circuit elements. Various device models are introduced and used, together with appropriate analytical techniques including digital computer simulation, to study circuit applications. The format in which the course is conducted involves substantial independent work and permits each student to concentrate in areas of particular interest to him. Laboratory activities are oriented toward circuit design.
One semester provides a working knowledge of some basic aspects of the subject.
Prerequisite: Engr. 12, or equivalent.

**75. Electromechanical Energy Conversion and Supply.** Conventional and unconventional motors, generators, and other electromechanical transducers; industrial control circuits; design of industrial systems and power plants; transmission.
Three class periods and a laboratory each week.
Prerequisite: permission of the instructor.
*Fall semester.*

**77. Topics in Information Transmission.** Selected topics relating to the transmission and processing of information and information-bearing signals. Application to communication and information-processing systems.
Three class periods and a laboratory each week.
Prerequisite: Engr. 12, or equivalent.
*Fall semester.*

**78. Control Theory and Design.** An introduction to classical and modern control theory. Concepts of state, controllability and observability. Analysis and design of linear automatic control systems by means of Nyquist diagram, frequency response and root locus method. Design by matrix methods and state variables. Stability criteria. Computers and logic systems in control. Analog to digital conversion. Introduction to optimum control. Special topics; sampled data systems, nonlinear processes, etc., according to class interest.
Three class periods and a laboratory each week.
Prerequisite: Engr. 12 (and preferably Engr. 55).
*Spring semester.*

**80. Physical Electronics.** The course begins with a study of the properties of semiconductors based on the quantum mechanical point of view. This background is then used in a detailed consideration of the operation of semiconductor devices. The connection between material properties and the characterization of devices as circuit elements is stressed.
Three class periods and a laboratory each week.
Prerequisite: Engr. 60.
*Spring semester.*

## MECHANICAL ENGINEERING

**82. Fluid Mechanics.** Fluid mechanics is treated as a special case of continuum mechanics for which the relevant equations expressing the conservation of mass, momentum, and energy are derived. Examples and applications are given for the perfect fluid and the linearly viscous fluid. Current research and problem areas in fluid mechanics and heat transport are discussed.

Four class periods each week.

Prerequisite: Ordinary differential equations and multivariate calculus.

*Spring semester.*

**84. Advanced Fluid Mechanics.** A study of the more specialized areas of fluid mechanics: boundary layer theory, compressible flow, wave motions, material-spatial coordinate transformations, and convective heat transfer. Independent work in either an experimental or analytical area is an important part of each student's work.

Four class periods each week.

Prerequisite: Engr. 82.

*Spring semester.*

**86. Advanced Thermodynamics.** An extension of the basic core thermodynamics, Engr. 53. The fundamental laws of thermodynamics are applied to conventional systems of energy conversion. Principles of irreversible thermodynamics are developed and applied to systems of direct energy conversion.

Four class periods each week.

Prerequisite: Engr. 53.

*Spring semester.*

**87. Conduction and Radiation Heat Transfer.** A course dealing with the basic introduction to physical phenomena involved in the conduction and radiation heat transfer processes. Work is done in both steady state and transient conditions. Analytical, empirical and numerical approaches are covered.

Four class periods each week.

Prerequisite: Ordinary differential equations.

*Fall semester.*

**88. Advanced Dynamics.** This course is based upon classical mechanics. Such concepts as the Lagrangian and the Hamiltonian are developed by way of variational methods. The dynamics of lumped parameters and distributed systems are discussed.

Four class periods per week.

Prerequisite: Engr. 51.

*Spring semester.*

**89. Machine Design.** The study of the analysis and synthesis of the elements of machines.

Three class periods and a laboratory each week.

Prerequisite: Engr. 59.

*Fall semester.*

**90. Engineering Design.** A generalized approach to design is developed stressing concepts of creativity. The general procedure for analyzing the underlying problem of a design is the foundation from which the creativeness of the student is stimulated.

Four class periods per week.

Prerequisite: Permission of the instructor.

*Spring semester.*

# ENGLISH LITERATURE

DAVID COWDEN, *Professor*
HAROLD E. PAGLIARO, *Professor*
DEREK TRAVERSI, *Professor*
THOMAS H. BLACKBURN, *Associate Professor and Chairman*‡
LEE DEVIN, *Associate Professor and Director of The Theatre*
CHARLES JAMES, *Associate Professor*
SUSAN B. SNYDER, *Associate Professor and Acting Chairman*
PHILIP M. WEINSTEIN, *Associate Professor*‡
BARRY GRADMAN, *Assistant Professor*
JOHN HINCHEY, *Assistant Professor*
LUCY McDIARMID, *Assistant Professor*
CRAIG WILLIAMSON, *Assistant Professor*
ROBERT TEITELBAUM, *Instructor and Technical Director of The Theatre*

This Department offers courses in English literature, American literature, theatre, and some foreign literatures in translation. The departmental curriculum is planned to provide experience in several critical approaches to literature and play production, in the intensive study of works of major writers, the study of literature of limited periods, and the study of the development of literary types. The Department also provides instruction in the techniques of writing, acting, and design for the theatre.

## Requirements and Recommendations

*Prerequisites:* Any introductory course—English 2 through 10—or its equivalent by Advanced Placement or by departmental examination, is the prerequisite for all other courses in literature and theatre. (This prerequisite does not apply to seniors, nor is it required of those who wish only to take studio courses in theatre.) A student may take more than one such course, but only one may be counted towards the major. The minimum requirement for admission as a major or as a minor in English is two semester-courses in the Department. Students considering a major in English are strongly urged to take one or two additional courses during the sophomore year. Majors and prospective majors should consult a member of the English Department for information about courses in other departments complementary to their work in English. Students who plan to do graduate work, to follow a course of professional training, or to seek teacher certification in English, should see a member of the Department for early help in planning their programs, as should students who plan to include work in English literature in a program with a Major in Literature or Medieval Studies. Students planning to qualify for teacher certification in English are reminded that a course in linguistics or the history of the English language is required in addition to specified work in literature.

*Major in Course:* The work of a major in Course consists of a minimum of eight semester courses in the Department, including Shakespeare (English 97) Problems of Literary Study (English 98), and at least two other courses in literature written before 1800; such courses are marked with an asterisk.

‡Absent on leave, 1974-75.

*Major in Honors:* Majors in Honors must prepare three or four papers in the Department, two of which must be on subjects covered in seminars in Group I or on other early material decided upon after consultation with the Department.

*Minor in Honors:* Minors in Honors are ordinarily required to prepare two papers in the Department.

*Theatre Concentration:* The work of a major in Course with a concentration in Theatre consists of a minimum of five semester courses in literature, including Shakespeare (English 97), and at least one other course in literature written before 1800; and a minimum of five semester courses in Theatre (or the equivalent in off-campus study and independent work). Of the five courses in Theatre, Play Analysis (English 74), Play Directing (English 78), and Design for the Theatre (English 76) are required. The senior essay for Course majors (English 98) is also required, though students in the concentration may elect to have it count as English or as Theatre (or they may divide the credit between the two), depending on the nature of their project. The remaining work in Theatre may include studio courses (Scene Study, Ensemble, Theatre Workshop) to a maximum of two credits.

Students are urged to consult the announcements of other departments which offer courses appropriate to the concentration. It is useful for those anticipating a theatre concentration to plan their programs early to avoid possible conflict with the twenty-course rule.

**1A. Analytic Reading and Composition.** Individual and group work as intensive preparation for further work and with applications to a variety of fields. For students to whom the course is recommended. Does not meet the distribution requirements. May be taken in more than one semester, but for a maximum of one and one half credits.

*Each semester.*

**1B. English for Foreign Students.** Individual and group work on an advanced level for students with non-English backgrounds.

*Each semester.*

**2. Science and the Literary Imagination.** An introduction to the critical reading of literature, using texts (in prose and verse from the 16th century to the present), which are concerned with or reflect the impact of science and scientific thinking on individual and society.

*Not offered in 1974-75.* Mr. Blackburn.

**3. The Divided Self.** A study of internal conflict in works by Conrad, Hardy, Faulkner, Penn Warren, Updike, and selected poets.

*Fall semester.* Mr. Cowden.

**4. Writers and Their Art.** The nature of art, the relationship between art and the artist, and between art and society, will be studied through close examination of selected texts.

*Each semester.* Mrs. McDiarmid.

**5. Studies in Anti-Rationalism.** This course will explore the developing interest in non-rational processes—imagination, instinct, passion—as that interest is expressed in major writers from the late 18th to the early 20th century. Two poets—Blake and Yeats—and two novelists— Dickens and Lawrence—will be intensively studied. Nietzsche and Freud will also be discussed in an attempt to understand the larger cultural dimensions of this interest. The pri-

mary focus of the course, however, will be upon the specific concerns of the individual writer and the artistry through which he expresses those concerns.
*Not offered in 1974-75.* Mr. Weinstein.

**6. The Courting Game.** A study of courtship in English literature in all its modes—lyric, comic, tragic, satiric—with special attention to the changing rules of the game and to the unsung seduction of the reader through the conscious manipulation of form. Major authors will be Malory, Shakespeare, Donne, Richardson, Austen, Lawrence, and Nabokov.
*Fall semester.* Mr. Williamson.

**7. The Personal Testament in American Literature.** A study of the uses of autobiography and personal experience in poetry, prose fiction, and non-fiction for the refreshment and clarification of historical and civil destinies. A primary concern will be the close relation in this literature between journalism or history and religious prophecy and moral instruction.
*Each semester.* Mr. Hinchey.

**8. The Literary Potentials of Irony.** A critical approach to reading prose, verse, and drama focussing on the effectiveness of the ironic spirit as a literary device. Selections will be drawn from English and American authors.
*Each semester.* Mr. James.

**9. Figures of Prophecy.** This course will deal with four writers—Blake, Conrad, Shakespeare, and Faulkner—whose sadness and outrage at mankind's penchant for self-injury often compels them to assume the role of admonisher or prophet in their work. Attention will be given to the nature and scope of each writer's prophecy and to the literary techniques he uses in expressing it.
*Each semester.* Mr. Gradman.

**19. Introduction to Old English: Language, Literature, and Culture.*** The course will be an introduction to Old English language, literature, and culture with an emphasis upon elegiac and heroic poetry. Initially, two days a week will be devoted to learning the language and to reading selected prose passages. One day a week will be spent on a cultural topic such as history, art, architecture, religion, or Germanic traditions. The latter part of the course will be devoted entirely to the study of Old English poetry.
*Fall semester.* Mr. Williamson.

**20. Medieval English Literature.*** The course is a survey of English literature, primarily poetry, from the 8th through the 15th century. Readings will include: Old English riddles and *Beowulf* in translation, two of Chaucer's *Canterbury Tales,* metrical romances, *Sir Gawain and the Green Knight, Everyman* and the *Chester Noah Play,* and versions of Arthurian legend and romance. No previous knowledge of Middle English is required for the course.
*Spring semester.* Mr. Williamson.

**21. Linguistics and Literature.** The first half of the course will be a study of English diachronics—the changing language from the 8th to the 20th century —with special emphasis upon problems of style and meaning in selected literary texts. The second half of the course will cover selected topics of interest to modern linguists and literary critics. These topics will include language as symbolic form (or action), sound symbolism, stylistics, translation, word coinage and the poetic manipulation of meanings, and the description of speech acts in life and literature. The course will be conducted in lay language so as

to be accessible to poets and linguists alike. This course will satisfy the English Department requirement for a course in Linguistics as a prerequisite for teacher certification.

*Spring semester.* Mr. Williamson.

**22. Satire.** Examination of satire as a literary genre.

*Not offered 1974-75.* Mr. Blackburn.

**23. Development of Realism.** Studies in realism, naturalism and symbolism in the English novel from *Middlemarch* to *Ulysses,* with some attention to French influences. Students are urged to read *Ulysses* before taking the course.

*Not offered 1974-75.* Mr. Weinstein.

**24. Science Fiction.** A study of the conventions and achievement of the genre, including a short historical survey of its development.

*Not offered 1974-75.* Mr. Blackburn.

**25. Shakespeare (For Non-Majors).** Study of representative plays. Not open to majors in the Department.

*Each semester.* Staff.

**28. Black American Literature Before 1890.** A study of literature written by black Americans from the eighteenth century through the era of Reconstruction. [Not a prerequisite for 29.]

*Spring semester.* Mr. James.

**29. Black American Literature Since 1890.** A study of prose and poetry by black Americans from Charles W. Chestnut to the present.

*Fall semester.* Mr. James.

**31. Chaucer.*** Reading in Middle English of most of Chaucer's poems, with emphasis on *The Canterbury Tales* and *Troilus and Criseyde.* The course attempts to place the poetry in the context of medieval culture.

*Fall semester.* Mr. Traversi or Mr. Williamson.

**33. Renaissance Poetry.*** Lyric and narrative poetry of the Elizabethan age and early 17th century.

*Not offered 1974-75.* Miss Snyder.

**34. Renaissance Comparative Literature.*** See CEL 34. (p. 156) Selected major writers of the Continental Renaissance studied in translation.

*Fall semester.* Miss Snyder.

**35. Tudor-Stuart Drama.*** Development of the English drama in the 16th and 17th centuries.

*Not offered 1974-75.* Mr. Blackburn.

**36. Milton.*** Study of Milton's poetry with particular emphasis on *Paradise Lost.*

*Not offered 1974-75.* Mr. Blackburn.

**37. Eighteenth-Century Literature.*** Reason, irrationality, and imagination in English literature, 1660-1800.

*Not offered 1974-75.* Mr. Pagliaro.

**38. Romantic Poetry.** A study of the poetry of Blake, Wordsworth, Coleridge, Shelley, Keats, and Byron, focusing on the modes of rebellion adopted by each and the forms and structures through which they are expressed.

*Fall semester.* Mr. Gradman.

**39. The Eighteenth-Century English Novel.*** A study of the emergence of the English novel. The course will focus on the range of narrative techniques displayed by the following authors: Defoe, Fielding, Richardson, Sterne, Walpole, Monk Lewis, and Jane Austen.

*Spring semester.* Mr. Gradman.

**40. Narratives of American Frontiers.** A survey of narratives of the discovery and occupation of the various American frontiers, with emphasis on the resources of imagination (myth, symbol, humor) by which the "facts" of historical experience are enlarged and transformed. Writers studied will include Bradford, Franklin, Cooper, Melville, Twain, Cather, and Faulkner.

*Fall semester.* Mr. Hinchey.

**41. Hawthorne, Melville, and James.** A study of the major novels and short fiction of each writer in terms of his conception of the moral basis of fiction. This will include such topics as the uses of symbolism, allegory, and romance, the contrasting claims of imagination and fact, the role of the narrator and the importance of drama, and the definition of "realism."

*Not offered 1974-75.* Mr. Hinchey.

**42. Victorian Literature.** The art of Victorian prose and poetry.

*Not offered 1974-75.* Mr. Cowden.

**43. Contemporary Poetry.** Varieties of American and English poetry since 1945.

*Spring semester.* Mrs. McDiarmid.

**44. Twentieth-Century American Fiction.** Selected novels and short stories of Faulkner, Fitzgerald, Lardner, Anderson, and Hemingway.

*Spring semester.* Mr. Hinchey.

**45. Modern Poetry** (British). Major British poets of the last hundred years.

*Fall semester.* Mrs. McDiarmid.

**46. American Poetry from Whitman to Frost.** A study of the tradition in American poetry that takes its start from "the simple, separate person," with emphasis on Whitman and Frost, but also including the major works of Poe, Dickinson, and Robinson, and some prose of Emerson and Thoreau.

*Spring semester.* Mr. Hinchey.

**47. The Contemporary Black Writer of the United States.** An examination of the ideology and the artistic sensibilities of some contemporary black writers as reflected in their prose and verse. Prerequisite: an introductory course, English 28 or English 29.

*Fall semester.* Mr. James.

**48. Theatre: Modern Drama.** See CEL 48 (p. 156). Examination of the range of dramatic literature since Ibsen.

*Spring semester.* Mr. Devin.

**49. The Black American Autobiography.** The study of a specifically black literary genre dating from the eighteenth century to the present. These works will be viewed as an intrinsic part of the black American literary experience.

*Spring semester.* Mr. James.

**50. The Modern English Novel.** Study of the development of the modern novel beginning with James and continuing to the present.
*Spring semester.* Mr. Cowden.

**51. Twain and Faulkner.** A study of the major works of each writer, with attention to both the art of fiction and the historical content.
*Not offered 1974-75.* Mr. Weinstein.

**52. T. S. Eliot.** A close examination of T. S. Eliot's work in relation to the problems and perspectives of poetry in the earlier part of the twentieth century. After discussion of the early poems, attention will be focussed on *The Waste-land* and *Four Quartets.*
*Spring semester.* Mr. Traversi.

**53. Literary Modernism: Studies in the Novel.** See CEL 53 (p. 156). An intensive study of the emergence of modernistic fiction written in German and English. Authors to be read include Rilke, Joyce, Kafka, Faulkner and Mann. A prior reading of Joyce's *Ulysses* and Mann's *Dr. Faustus* is strongly urged.
*Not offered 1974-75.* Mr. Weinstein and Mr. Avery.

**56. Folklore and Folklife Studies.** See History 56. An introduction to the major forms of folklore and selected forms of folklife materials. The course includes the study of myth, legend, folktales, proverbs, jokes, riddles, and other verbal arts including folk music. It explores superstition, witchcraft, magic and popular beliefs; and considers the function of folklore in highly industrialized modern societies as well as in traditional ones.
*Not offered 1974-75.* Mrs. Morgan.

**70. Fiction Writers' Workshop.** Projects in imaginative writing. Meetings will be devoted primarily to the analysis of stories submitted by students, and secondarily to the discussion of readings in the theory of fiction, the craft of fiction, and the work of contemporary authors. Admission and credit are granted at the discretion of the instructor.
*Spring semester.* Mr. Gradman.

**71. Poetry Workshop.** A class, limited to twelve, in which students will write, read, and talk about poetry. Students should submit three poems or so for admission to the course. The class will meet once a week together, and in individual conferences. Admission and credit are granted at the discretion of the instructor.
*Spring semester.* Mr. Williamson.

**72. Theatre: Scene Study.** Performance and criticism of scenes from plays; basic acting exercises; introduction to techniques of realism. One-half semester-course credit. This course may be repeated for credit with the instructor's permission. (Studio course)
*Each semester.* Mr. Devin.

**73. Theatre: Production Workshop.** Introduction to theatre technology; problems in lighting, sound, and scene design. One-half semester-course credit. This workshop may be repeated for credit with the instructor's permission. (Studio course)
*Each semester.* Mr. Teitelbaum.

**74. Theatre: Play Analysis.** Examination of playwriting strategies and the solution of problems in dramaturgy. Emphasis on Aristotle's *Poetics* and other "architectural" criticism. Application of critical principles to selected plays.
*Fall semester.* Mr. Devin.

**75. Theatre: Ensemble.** An intensive course in theatre technique consisting in a rehearsal period of five weeks, five nights a week, 8:00-11:00 p.m. A company of 14 actors is selected at the beginning of each semester through tryouts and interviews. One-half semester-course credit. This course may be repeated for credit with the instructor's permission. (Studio course)
*Each semester.* Mr. Devin.

**76. Theatre: Design for the Theatre.** The philosophic grounding of contemporary theatrical design; practical application of basic technologies.
*Fall semester.* Mr. Teitelbaum.

**77. Theatre: Advanced Design.** An intensive study of theatre/environment design with particular emphasis on design responses to dramatic literature.
*Spring semester.* Mr. Teitelbaum.

**78. Theatre: Play Directing.** Analysis of dramatic literature for production. Exploration of performance possibilities in selected scripts.
*Spring semester.* Mr. Devin.

**79. Theatre: History of the Theatre.** The idea of a theatre as expressed in the architecture, set design, technology, and production style of important periods.
*Fall semester.* Mr. Teitelbaum.

**81. Colloquium: Beowulf.** A close reading of the oldest English epic in the original *Englisc.* Much of the time will be devoted to translation though we will transcribe, sing, and scan portions of the poem. Some readings in Anglo-Saxon culture, such as Dorothy Whitelock's *The Audience of Beowulf* and the British Museum's *The Sutton Hoo Ship-Burial,* will be assigned. Single credit.
Prerequisite: English 19.
*Not offered 1974-75.* Mr. Williamson.

**82. Colloquium: Dickens.** A study of the major novels as literary texts and social documents. Single credit.
*Spring semester.* Mr. Cowden.

**92. Independent Study.** Students who plan independent study must consult the appropriate instructor and submit a prospectus to the Department by way of application for such work before the beginning of the semester during which the study is actually done. Deadlines for the receipt of written applications are May 1 and November 30.

**93. Directed Reading.** Projects may be undertaken under the same conditions as those listed above for independent study.

**97. Shakespeare (for Course majors only).** Study of the complete works of Shakespeare, tracing the development of his craftmanship and ideas. Required of Course majors in the Department, who meet weekly in small groups during the first semester of the senior year. Students should read through the plays before beginning the course. Two credits.
*Fall semester.* Staff.

**98. Problems of Literary Study.** In the spring semester of the senior year, Course majors in the department pursue a literary problem of their own choosing. The major part of the semester is devoted to writing a thesis under the supervision of a member of the department. A prospectus for this thesis must be submitted for approval by the department on or before 15 October of the fall semester of the senior year; before submitting the prospectus, and preferably in the spring of the junior year, Course majors should consult with the department Chairman and with the department member who might supervise the project. Two credits.

*Spring semester.* Staff.

HONORS SEMINARS

*Group I*

**101. Shakespeare.** Study of Shakespeare as dramatist and poet. The emphasis is on the major plays, with a more rapid reading of the remainder of the canon. Students are advised to read through all the plays before entering the seminar.

*Each semester.* Staff.

**103. Chaucer and Dante.** This seminar will aim at exploring the civilization of the Middle Ages—a civilization very different from, but relevant to our own—through the work of two of its greatest poets. Emphasis will be placed on a close reading of Chaucer's major poems (*Troilus and Criseyde* and *The Canterbury Tales)* and on the *Divine Comedy*. The reading of Dante's poem will use the original Italian with an English translation to supplement it as required.

*Fall semester.* Mr. Traversi.

**104. Milton.** Study of Milton's works with special emphasis on *Paradise Lost.*

*Not offered 1974-75.* Mr. Blackburn.

**105. Tudor-Stuart Drama.** The development of English drama from medieval morality plays to Jacobean tragedy and comedy.

*Not offered 1974-75.* Mr. Blackburn.

**106. Renaissance Epic.** The seminar will focus on Spenser's *Faerie Queen* and Milton's *Paradise Lost.* The context of these epics in the work of each poet will be considered and a modest survey of the epic as genre in the Renaissance will be undertaken.

*Spring semester.* Miss Snyder.

**108. Renaissance Poetry.** Poetic modes and preoccupations of the English Renaissance, with emphasis on Sidney, Shakespeare, Spenser, Donne, Herbert, and Marvell.

*Spring semester.* Miss Snyder.

**109. Eighteenth-Century Literature.** Examination of the literary forms and critical values of the age, with special attention given to the works of Dryden, Swift, Pope, and Johnson.

*Not offered 1974-75.* Mr. Pagliaro.

**110. The Romantic Poets.** Examination of the poetry of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.
*Spring semester.* Mr. Pagliaro.

*Group II*

**113. The Modern Novel.** Studies in four novelists: James, Conrad, Joyce, and Woolf.
*Spring semester.* Mr. Cowden.

**115. Modern Comparative Literature.** Examination of fiction from Flaubert to Beckett. Students are urged to read *Ulysses* before taking the seminar.
*Not offered 1974-75.* Mr. Weinstein.

**116. American Literature.** Novelists and poets from the 19th and 20th centuries, representative of the themes, forms, and character of American literature.
*Fall semester.* Mr. Hinchey.

**118. Modern Poetry.** Study of the modern tradition in English and American poetry. The seminar will concentrate on the work of Yeats, Eliot and Auden.
*Spring semester.* Mrs. McDiarmid.

**119. Modern Drama.** The range of dramatic literature since Ibsen.
*Spring semester.* Mr. Devin.

**180. Thesis.** A major in Honors may elect to write a thesis as a substitute for one seminar. He must select his topic and submit his plan for Department approval no later than the end of the junior year. Normally, he writes his thesis, under the direction of a member of the Department, during only one of the semesters of his Honors work, but not the final semester.

**183. Independent Study.** Students may prepare for an Honors Examination in a field or major figure comparable in literary significance to those offered in the regular seminars. Independent study projects must be approved by the Department and supervised by a Department member. Deadlines for the receipt of written applications are May 1 and November 30.

# HISTORY

PAUL H. BEIK, *Professor***
JAMES A. FIELD, JR., *Professor*
HARRISON M. WRIGHT, *Professor and Chairman*†
ROBERT C. BANNISTER, *Associate Professor*‡
KATHRYN L. MORGAN, *Associate Professor*‡
BERNARD S. SMITH, *Associate Professor*§
MARGARET ANDERSON, *Assistant Professor**
ROBERT S. DUPLESSIS, *Assistant Professor*
LILLIAN M. LI, *Assistant Professor*
JEROME H. WOOD, JR., *Assistant Professor*

The Department of History attempts to give students a sense of the past, an acquaintance with the cultural and institutional developments which have produced the world of today, and an understanding of the nature of history as a discipline. The courses of the department emphasize less the accumulation of data than the investigation, from various points of view, of those ideas and institutions—political, religious, social, economic—by which man has endeavored to order his world.

## Requirements and Recommendations

*Prerequisites:* Any one of the introductory history courses (those numbered 1 through 9), or its equivalent by Advanced Placement, is the prerequisite for advanced history courses open to students of all classes (those numbered 11 through 59). In the sophomore and junior years, with the consent of the instructor and of the department chairman, an advanced course may be taken concurrently with an introductory course. In the senior year advanced courses may, with the consent of the instructor, be taken without prerequisite. The prerequisite for admission to the department as a major in Course or Honors or as a minor in Honors is at least two history courses taken at Swarthmore and a satisfactory standard of work in all courses.

*Advanced Placement:* The department will grant one semester's credit for incoming students who have achieved a score of 4 or 5 in Advanced Placement history tests. This credit may be counted toward the number of courses required for graduation. It may be used in partial fulfillment of the college distribution requirements. It may serve as the prerequisite for advanced courses in history.

*Major in Course:* The work of the major in Course consists of at least eight semester courses in the department, one of which is Special Topics (History 91). For purposes of distribution, the department has divided its courses into four groups: (1) Ancient, Medieval, and Early Modern Europe; (2) Modern Europe; (3) the United States; and (4) Africa, Asia, and Latin America. Course majors are expected to take at least two courses (introductory and advanced) from any two of these groups and two courses from the remaining groups combined. Beyond that, majors are encouraged to concentrate informally in topics that are of special interest to them. The required Special Topics considers the nature and method of historical research and writing, and involves an extended research paper. The comprehensive examination will

‡Absent on leave, 1974-75.
**Acting Chairman, spring semester, 1975
*Absent on leave, fall semester, 1974.
†Absent on leave, spring semester, 1975.
§Director, Swarthmore Program in Grenoble, spring semester, 1975.

be based primarily on the work done in Special Topics and in associated courses.

*Major and minor in Honors:* Students entering the Honors program may elect history as a major or a minor in the Division of the Humanities, in the Division of the Social Sciences, or in cross-divisional programs. Majors in Honors may take either three or four seminars in the department. Minors in Honors are ordinarily expected to take at least two seminars.

*General:* Students seriously considering a major in history should try to take more than two history courses during their freshman and sophomore years. Those who intend to continue their studies after graduation should bear in mind that a reading knowledge of one or two foreign languages (particularly French and German) is now generally assumed for admission to graduate school.

**1. Early Europe.** Europe from the fall of the Roman Empire to the Enlightenment. This course will provide an introduction to the study of history, stressing the uses of primary sources.

*Fall semester.* Mr. Smith or Mr. DuPlessis.

**2. Modern Europe.** Europe from the Enlightenment to the mid-twentieth century.

*Each semester.* Miss Anderson, Mr. Beik, or Mr. DuPlessis.

**4. Latin America.** The development of the Latin American area from preconquest times to the present. Emphasis is on the political, economic, and social development of Brazil, Mexico, Argentina, and post-revolutionary Cuba.

*Spring semesters.* Mr. Wood.

**5. The United States to 1877.** The colonial experience; independence, a new society and a new government; transcontinental expansion and the struggle between North and South.

*Fall semesters.* Mr. Bannister, Mr. Field, or Mr. Wood.

**6. The United States since 1877.** Industrialism and its consequences; the United States as a great power; the problems of a shrinking world.

*Spring semesters.* Mr. Bannister or Mr. Field.

**7. African-American History.** A survey of the African-American experience from its African background to the present. Topics will include politics, economics, education, philosophy, race relations, and selected forms of expressive culture.

*Fall semester, 1975.* Mrs. Morgan.

**8. Africa.** A survey of African history, with an emphasis on tropical Africa in modern times.

*Fall semester, 1974.* Mr. Wright.

**9. Chinese Civilization.** An historical introduction to various aspects of traditional Chinese civilization and culture—language, literature, philosophy, art, imperial and bureaucratic institutions. The impact of Chinese civilization on other parts of Asia will be examined briefly.

*Fall semesters.* Miss Li.

**10. Freshman-Sophomore Seminar.** Collaborative small group investigation of subjects within the particular fields of interest of members of the department.

*Not offered in 1974-75.*

**11. Early Medieval Europe.** The history of western Europe from the accession of Diocletian to the last Carolingians.
*Fall semester, 1974.* Mr. Smith.

**12. Later Medieval Europe.** The history of western Europe from the tenth to the fifteenth century, with emphasis on the role of the Papacy.
*Spring semester, 1976.* Mr. Smith.

**13. England to 1509.** The political, cultural, and religious history of England from the Roman occupation to the accession of Henry VIII.
*Spring semester, 1976.* Mr. Smith.

**14. Medieval European Intellectual History.** The history of ideas in western Europe from the fifth to the fourteenth century, with roughly equal attention being paid to the development of political theory, theology, philosophy, education, and science.
*Fall semester, 1974.* Mr. Smith.

**16. The Renaissance.** The transformation of Europe from the 14th century to about 1520: the civilization of the Italian urban communities analyzed in its social, economic, political and religious as well as cultural aspects; the spread and manifestations of the Renaissance elsewhere in Europe.
*Fall semesters.* Mr. DuPlessis.

**17. The Rise of Western Europe.** Europe in the 16th and 17th centuries: the Reformation and Counter-Reformation; problems of state-building; the beginnings of modern science and of European overseas expansion; the economic and social structures of early capitalism. The general crisis of the mid-17th century serves as a case study in the strengths and weaknesses of the early modern state and society.
*Spring semester, 1975.* Mr. DuPlessis.

**18. Tudor and Stuart England.** The English Renaissance and Reformation, constitutional developments and the origins of radical politics, the Civil War, the Restoration and the Glorious Revolution.
*Not offered in 1974-75.* Mr. DuPlessis.

**Classics 31. History of Greece.** (See listing under Department of Classics.)

**Classics 32. The Roman Republic.** (See listing under Department of Classics.)

**Classics 42. Greece in the Fifth Century B.C.** (See listing under Department of Classics.)

**Classics 44. The Roman Empire.** (See listing under Department of Classics.)

**21. The French Revolution and Napoleon.** The place of the French Revolution and Napoleon in the development of European political institutions and social theories.
*Fall semester, 1975.* Mr. Beik.

**22. French Regimes since Napoleon.** The succession of political shocks and readjustments from 1814 to the present, studied in the context of social changes and popular aspirations.
*Fall semester, 1974.* Mr. Beik.

**24. Modern England.** England's domestic and imperial history from 1785 to the present.
*Not offered 1974-75.*

**25. Modern Russia.** The course begins with the reign of Peter and gives half its time to the twentieth century.
*Spring semesters.* Mr. Beik.

**26. Modern Germany 1848-1945.** Germany's development from Bismarck through Hitler.
*Fall semester, 1975.* Miss Anderson.

**28. Europe of the Dictators, 1914-1945.** The assault of radical politics, left and right, on the social and political fabric of Europe; the interaction of domestic and international conflict; the crisis of industrial capitalism; nationalism, militarism, racism; the first effective experiments in the use of ideology, technology, and terror as means of social control.
*Spring semesters.* Miss Anderson.

**29. Topics in European History.** Offered as opportunity permits.

**Economics 12. The Industrial Revolution in Great Britain.** (See listing under Department of Economics.)

**30. The American Colonies.** The foundations of American civilization, 1607-1763. Topics treated include: the development of representative government; denominationalism and religious toleration; the emergence of a new social structure; racism and ethnic relations; and England's imperial policy.
*Fall semester, 1975.* Mr. Wood.

**31. The American Revolution.** The conflict between intensive self-government in the colonies and English ideas and projects for empire; the revolt against colonial status and the elaboration of a "republican" ethos and "republican" institutions, 1763-1789.
*Spring semester, 1976.* Mr. Wood.

**32. American Intellectual History to 1865.** Puritanism, the Protestant Ethic, and national character; Enlightenment, Revolution and the liberal tradition; revivalism, Romanticism, and reform; Transcendentalism and the New England Renaissance; racism, nationalism, and the Civil War.
Not open to freshmen.
*Fall semesters.* Mr. Wood.

**33. American Intellectual History since 1865.** Liberalism from the "gospel of wealth" to the new industrial state; the "revolt against formalism" in philosophy, law, and the social sciences; literature and society from realism to the Beat Generation; DuBois, Garvey, and Black Power; the Old Left and the New; culture and conservatism.
Not open to freshmen.
*Spring semester, 1976.* Mr. Bannister.

**34. America in the Progressive Era, 1896-1920.** The attack on political privilege and the movement for the control of industry; urban poverty, the new immigration, race relations, women's rights, temperance, and conservation; the emergence of America as a world power.
*Not offered 1974-75.* Mr. Bannister.

**35. America and the World: to 1900.** The American role in world affairs from the Revolution through the War with Spain; independence and westward expansion; ideological and economic interaction with Europe and the outer world; the growth of industrial power and the problem of "imperialism."
*Fall semester, 1974.* Mr. Field.

**36. America and the World: since 1900.** New responsibilities in the Caribbean and the Far East; the expansion of American economic and cultural influence; two world wars and the effort to prevent a third; the American "challenge" and the American "empire."
*Spring semester, 1975.* Mr. Field.

**37. Education in America.** (Also listed as Education 37.) A history of primary, secondary, and higher education in America from the European and colonial origins to the present. The course will consider both theory and practice within the context of American society and culture, and in relation to other agencies of socialization.
Prerequisite: The usual exemption for seniors is extended to juniors in the Program in Education.
*Not offered 1974-75.* Mr. Bannister or Mr. Wood.

**38. Topics in American History.** Intensive study of particular problems. Offered as opportunity permits. Limited enrollment. The topic in 1974-75 is *The American Family in Historical Perspective.* A consideration of ideas about women, children, education, and the family from the 17th to the 20th century. The relationship between family history and political, economic, religious, and social change will be a major theme.
*Spring semester, 1975.* Mr. Frost (Department of Religion).

**39. Topics in African-American History.** Offered as opportunity permits.
*Not offered 1974-75.* Mrs. Morgan.

**Religion 37. History of Religion in America.** (See listing under Department of Religion.)

**Religion 38. Quakerism.** (See listing under Department of Religion.)

**41. South Africa.** A survey of South African history with an emphasis on Black-White relations and on the development of contemporary problems.
*Fall semester, 1974.* Mr. Wright.

**42. Topics in African History.** Special problems in African history. Offered as opportunity permits. Limited enrollment.
Mr. Wright.

**43. The Expansion of Europe.** A survey of European overseas expansion since 1415, and of its impact on non-European societies. The emphasis is on South and Southeast Asia.
*Not offered 1974-75.* Mr. Wright.

**44. Modern China.** The history of China since the early 19th century. Topics include the impact of the west, reform and revolution, nationalism, and the development of the communist movement.
*Spring semesters.* Miss Li.

**45. Modern Japan.** The transformation of Japan into a modern nation-state, from the early 19th century until the present.
*Fall semester, 1974.* Miss Li.

**47. Topics in East Asian History.** Intensive study of particular problems. Offered as opportunity permits.
Miss Li.

**48. Topics on Modern China.** (Also listed as Political Science 48.) In 1974-75, this course will focus on social and economic changes and their political repercussions in China from the Ch'ing dynasty to the present. Readings will include the contemporary observations of Chinese and foreigners. The course will meet once a week as a colloquium. Prerequisite: *Either* History 9, History 44, or Political Science 20; *or* permission of the instructors.
*Spring semester, 1975. Not offered 1975-76.* Miss Li and Mr. Lieberthal.

**49. African Cultures in Latin America.** The history of black men in French, Portuguese, and Spanish America: slavery, emancipation, the contemporary scene. Special attention will be given to the impact of African civilization on

Latin countries, as well as to comparative analysis of the experience of blacks in that region and in the United States.
*Spring semester, 1975.* Mr. Wood.

**56. Folklore and Folklife Studies.** (Also listed as English 56.) An introduction to the major forms of folklore and selected forms of folklife materials. The course includes the study of myth, legend, folktales, proverbs, jokes, riddles, and other verbal arts including folk music. It explores superstition, witchcraft, magic, and popular beliefs; and considers the function of folklore in highly industrialized modern societies as well as in traditional ones.
*Not offered 1974-75.* Mrs. Morgan.

**57. The Nature of History.** Readings and discussion centering on the nature of historical writing, on the relationship of the historian to his time, and on historical method and its problems. Limited enrollment. Open to majors and, with the permission of the instructor, to non-majors.
Mr. Wright.

**91. Special Topics.** Group meetings of senior majors in the Department. A consideration of the nature and method of historical research and writing, involving an extended research paper.
*Fall semesters.* Members of the Department.

**93. Directed Reading.** Individual or group study in fields of special interest to the student not dealt with in the regular course offerings. The consent of the chairman and of the instructor is required. History 93 may be taken for one-half credit as History 93A.
Members of the Department.

**96. Thesis.** With the consent of the chairman and of the supervising member of the Department a thesis may be substituted for a course in the fall semester of the senior year. One course credit.
Members of the Department.

## Honors Seminars

The following seminars are offered by the Department to juniors and seniors who are preparing to be examined for a degree with Honors. They may be taken without regard to chronological order. Some preliminary reading or other preparation may be required for seminars on subjects in which no work has previously been done.

Those who wish to specialize in international relations with a major in history (see page 143), should include in their programs at least three of the following seminars: 128, 134, 140, 144.

**111. Medieval Europe.** Western Europe from the Papal-Frankish alliance of the 8th century to about 1300.
*Spring semester, 1976.* Mr. Smith.

**116. The Renaissance.** Major topics in Western European history from the 14th to the early 16th century, with concentration on the emergence of early modern society and culture in Italy and their adoption by the rest of Europe.
*Fall semesters.* Mr. DuPlessis.

**117. Europe 1500 to 1650.** A study of England, France, Germany and the Low Countries from the time of the Reformation to the crisis of the 17th century.
*Spring semester, 1976.* Mr. DuPlessis.

**118. Tudor and Stuart England.** The English Renaissance and Reformation, constitutional developments, the Civil War, and the Restoration.
*Not offered 1974-75.* Mr. DuPlessis.

**122. Europe 1760 to 1870.** The revolutionary transformation of the old regime; the rise of liberalism and its critics.
*Fall semesters.* Mr. Beik.

**123. Europe 1870 to 1945.** The high noon of liberal constitutionalism and of European power; the destruction of this order through the emergence of mass politics in the 20th century.
*Spring semester,* 1975. Miss Anderson.

**124. England since 1785.** The rise of the first modern industrial state. Its social, political, and economic problems.

**125. Fascist Europe.** A consideration of the origins, structure, and activities of right-wing movements in Italy, France, Spain and, particularly, Germany, c. 1918-1945.
*Spring semesters.* Miss Anderson.

**128. Eastern Europe.** The origins and consequences of the Russian Revolution and the development of the nations of East Central Europe.
*Spring semesters.* Mr. Beik.

**Economics 112. 20th Century Britain and the World Economy.** (See listing under Department of Economics.)

**130. Early American History.** Political, economic, social, and cultural aspects of the period from the explorations to the early National era.
*Fall semester, 1974.* Mr. Wood.

**132. The United States since 1787.** Selected topics in the history of the United States.
*Spring semester, 1975.* Mr. Bannister, Mr. Field, or Mr. Wood.

**134. American Diplomatic History.** A study of the evolution since 1776 of American relations with the outer world with emphasis on ideological, economic, and strategic developments.
*Fall semester, 1974.* Mr. Field.

**136. American Intellectual History.** Topics in the history of American thought focusing on selected themes and time periods. Major contributions in political and social theory, religion and philosophy, literature and the arts will be considered within a broader institutional and social context, and against the European background.
*Fall semester, 1975.* Mr. Bannister.

**140. Modern Africa.** Studies in sub-Saharan African history with emphasis on the period since 1800.
*Spring semester, 1976.* Mr. Wright.

**144. Modern East Asia.** Political, social, and intellectual change in China and Japan since the early 19th century, comparing the different responses to western imperialism and the different approaches to modernization.
*Spring and fall semesters, 1975.* Miss Li.

**148. Latin America.** Selected topics in Latin American history.
*Spring semester, 1975.* Mr. Wood.

**180. Thesis.** With the permission of the Department Honors students may write a thesis for either single or double course credit. Double-credit theses will normally be written in the fall semester of the senior year for submission as papers to the visiting examiners. Honors students wishing to write a thesis for single credit should elect History 96.

# INTERNATIONAL RELATIONS

Students who plan to enter upon a career in the field of international relations should include in their programs, during the first two years, introductory courses in economics, history, and political science and should complete the intermediate course in one or more modern languages.

Advanced courses selected from the groups listed below may be incorporated in the programs of students who do their major work in economics, history, political science, or a modern language.

These students who wish to concentrate in international relations may take their Senior Comprehensive Examination in this field. Students preparing for this examination should take eight or more courses from among those listed below, including all of those listed in Group I, one or more in Group II, and one or more in Group III. The examination is administered by a committee appointed by the chairmen of the Departments of Economics, History, and Political Science, under the chairmanship of the Department of Political Science.

**Group I**

Political Science 4. *International Politics*
Political Science 13. *International Organizations in World Politics*
Political Science 14. *American Foreign Policy*
Economics 30. *The International Economy*

**Group II**

History 4. *Latin America*
History 8. *Africa*
History 25. *Modern Russia*
History 35. *America and the World: to 1900*
History 36. *America and the World: since 1900*
History 43. *The Expansion of Europe*
History 44. *Modern China*
History 45. *Modern Japan*
History 46. *Asian Nationalisms*

**Group III**

Economics 11. *Economic Development*
Economics 31. *Comparative Economic Systems*
Political Science 3. *Comparative Politics*
Political Science 5. *Politics of the Third World*
Political Science 18. *Political Development*
Political Science 19. *Comparative Communist Politics*
Political Science 20. *Politics of China.*
Political Science 21. *Politics of Africa*
Political Science 22. *Latin American Politics*
Political Science 55. *Modern Political Theory*
Political Science 64. *Topics in International Relations*
Political Science 70. (also listed as Economics 70). *The Political Economy of Communist Systems*

Students who plan to enter the Honors program will find it possible to select a similar combination of courses and seminars in the field of international relations. In planning such programs, they should consult with the chairman of their prospective major department.

# LINGUISTICS

ALFRED BLOOM, *Assistant Professor*
JOHN BAUGH, *Lecturer*

Linguistics is the study of language. On the most general level it deals with the internal structure of languages, the history of their development and the role they play in influencing the entire spectrum of human activity. *Descriptive linguistics* involves an attempt to arrive at an adequate description of the phonological, syntactic and semantic components of language, differentiating those elements which are generic to all languages from those which are particular to any given language or family of languages. *Diachronic* or *historical linguistics* looks at the evolution of these components over time. *Sociolinguistics* centers on the link between language and the social context in which it is spoken; *psycholinguistics,* on the interplay between the structure of language and the processes of perception and cognition. Linguistic variables may, furthermore, influence interpersonal and intergroup action, assuage or exacerbate domestic or international conflict, enhance or impede efforts at national integration in developing nations. They play a central role in shaping the form and meaning of literary expression and constitute a significant area of philosophical inquiry. Therefore, although a major in linguistics is not offered, special majors bridging linguistics and the humanities or the social sciences can be conceptually very meaningful and are encouraged for Course students. Honors students may minor in linguistics.

Psycholinguistics can be singled out as a particularly rewarding area of cross-disciplinary research because of the natural link between language and psychology and the extent of contemporary interest in this field. Following are the requirements (11 course units) for the special major in Psycholinguistics:

(a) Linguistics 1 and 2 (Introduction to the study of language).

(b) At least one course from the following:
Psychology 39. *Child Psychology*
Psychology 43. *Psychology of Communication*

(c) Three courses from among the following:
Linguistics 52. *Diachronic Linguistics*
Linguistics 68. *Directed Reading or Research*
Linguistics 107. *Language and Thought*
Linguistics 108. *Contemporary Approaches to Descriptive Linguistics*
Sociology 26. *Language, Society and Culture*

(d) Five courses (or four, in case both Psychology 39 and Psychology 43 are chosen) from among:
Psychology 1. *Experimental Psychology*
Psychology 25. *Methods of Psychological Research*
Psychology 37. *Learning and Behavior Theory*

Psychology 46. *Cognitive Processes*
Psychology 50. *Perception*
Psychology 97. *History and Systems of Psychology*

**1. Language—An Introduction.** An introduction to language and its multifaceted interaction with human thought and behavior. The first part of the course will concentrate on the description of the internal structure of language, providing a grounding in the principles of structural linguistics, transformational grammar and semantic theory. The second part will turn from a description of internal structure to brief explorations into the role played by linguistic variables in psychological development, philosophical inquiry, sociopolitical interaction and artistic creation.

*Fall semester.* Mr. Bloom.

**2. The Psychology of Language.** An examination of the interplay of thought and language in the processes of perception, cognition and development.
Prerequisites: Linguistics 1 or permission of the instructor.

*Spring semester.* Mr. Bloom.

**7. The Evolution of Afro-American Dialects.** This is an introductory course designed to examine the historic importance of African languages and the subsequent relationship of slave trade jargons to the evolution and development of the Black English Vernacular. Linguistic concepts will be introduced as they relate to synchronic investigations of Afro-American dialects. Pertinence of language patterns to Afro-American culture will be explored.

*Spring semester.* Mr. Baugh.

**34. Cognitive Patterns in Moral and Political Behavior.** (See Psychology 34).

**52. Diachronic Linguistics.** An introduction to historical linguistics: the reconstruction of prehistoric linguistic stages, the establishment of language families and their interrelationships, and the examination of processes of linguistic change on all levels, phonological, morphological, syntactic and semantic. The history of the English language, as the language common to all participants, will be central to the course.

Prerequisite: Permission of the instructor.

*Fall semester. Not offered in 1974-75.*

**93. Directed Reading or Research.** Students may conduct a reading or research program in consultation with the instructor (permission of the instructor required).

*Either semester.*

## Honors Seminars

**106b. Cognitive Development.** (See Psychology 111).

**107. Language and Thought.** Philosophical, psychological and linguistic approaches to the problem of meaning.

Prerequisite: Linguistics 1 and 2.

**108. Contemporary Approaches to Descriptive Linguistics.** A comparison of models of linguistic description with emphasis on recent developments in transformational grammar and generative semantics.

Prerequisites: Linguistics 1 or permission of the instructor.

*Spring semester.* Mr. Bloom.

# LITERATURE

The Literature major is administered by a Literature Committee representing the Departments of Classics, English Literature, and Modern Languages and Literatures. The basic requirement for a major in Literature is work in two or more literatures in the original language. A student who intends to major in Literature will submit to the Literature Committee a proposed program of integrated work which sets forth the courses or seminars to be taken and the principle of coherence upon which the selection is based. The Committee will review the proposal and advise the student. Subject to the requirement of serious study of at least two literatures in the original language, one of which may be English, work in translation is encouraged, especially as it consists of thematic or comparative courses. In lieu of a regular course, the Literature Committee will consider proposals for an individual or cooperative project, for one or more research papers written as course attachments, or for the substitution of a thesis for course credit when these projects have as their purpose either the integration of work within the major or the relating of work outside the major to some portion of the major.

*For a major in Course the requirements are as follows:*

1. A minimum of ten courses in two or more literature departments, including a substantial concentration of work—normally not fewer than five courses—in one of the departments. Only courses numbered 11 or above in Classics and Modern Languages and Literatures are counted as constituents of the Literature major. Of English courses numbered 2 through 10, only one may be counted for the major.

2. A senior essay planned early in the first semester of the senior year. The senior essay counts for at least one credit, usually for two credits, and is thus a paper of considerable scope or intensiveness in which a theme or result of the student's individual program of work is developed. In some cases the Committee may require that the essay be written in whole or in part in a language other than English.

3. A comprehensive examination taken in the second semester of the senior year.

*For a major in Honors the requirements are as follows:*

Not fewer than five papers in Literature, including at least three in one department and significant work done in a foreign language, ancient or modern. Literature majors in Honors are encouraged to include in their program a thesis with the purpose of integrating the work of the major in accord with the principle of coherence on which the program is based.

Prospective majors in Literature are urged to make their plans early so as to acquire the necessary linguistic competence by the junior year.

# MATHEMATICS

DAVID ROSEN, *Professor and Chairman*
STEVENS HECKSCHER, *Professor*
JAMES W. ENGLAND, *Associate Professor*
GUDMUND R. IVERSEN, *Associate Professor*†
EUGENE A. KLOTZ, *Associate Professor*
J. EDWARD SKEATH, *Associate Professor*
ROY L. SMITH, *Assistant Professor*
FRED SOLOMON, *Assistant Professor*
E. R. MULLINS, JR., *Director of Computer Education and Activities*

Pure mathematics is an abstract subject and may be looked upon as the model of a deductive science. On the other hand, the subject matter of mathematics has for the most part arisen out of concrete applications to the physical sciences, among which geometry occupies a central position. The courses offered in the Department of Mathematics attempt to combine these points of view and to give a picture of the power and beauty of the subject when studied for its own sake, as well as its many relations to other fields of thought. The study of mathematics is essential as a tool for the understanding of the principles of the physical sciences and engineering; a knowledge of its techniques is indispensable for a successful pursuit of these subjects. The same is becoming increasingly true in the biological sciences and the social sciences.

The sequence consisting of Courses 5, 11, 22, 44 forms the normal preparation for majoring in mathematics. Students going into physics and engineering may substitute other courses for Course 44. Those students who have obtained a grade of 3 or better on the Advanced Placement AB examination normally take Course 11 while those who similarly qualify in the BC examination normally take Course 12.

A student who wishes to major in mathematics in Course must complete six courses in addition to the normal sequence of four courses listed above. It is expected that a Course major in mathematics will take some advanced courses from the three major areas, namely analysis, algebra, topology-geometry. Physics 3, 4 is highly recommended and a reading knowledge of French, German, or Russian is desirable for all mathematics majors.

In order to be admitted to the Honors program with work in mathematics a student must have completed Courses 22 and 44. An Honors student with a major in mathematics will normally take in his junior year seminars 101 (Real Analysis), and 102 (Modern Algebra). In his senior year he will normally take seminars 103 (Complex Analysis), and 104 (Topology) or 105 (Probability and Statistics).

An Honors student minoring in mathematics will normally offer two papers in mathematics. A student may use Courses 51, 52 as partial preparation for an Honors paper in mathematics.

All mathematics students are urged to acquire some facility with the computer.

The normal Course program and Honors program for majors in mathematics constitutes a thorough preparation for potential teachers in secondary schools. Mathematics majors in Course or Honors automatically meet the

†Absent on leave, spring semester, 1974-75.

mathematics requirements for being certified to teach mathematics in secondary school. Others who wish to be certified to teach in secondary school must complete a minimum of six mathematics courses, as follows: Math 5, 11, 23, 24 and any other two advanced mathematics courses.

Training in statistics is offered on two levels: an applied sequence for students with very little background in mathematics, Courses 1 and 2; and a mathematical sequence for students who have knowledge of calculus and matrices, Courses 15 and 16. Students in all disciplines who will, at one time or another, analyze data as part of their work in other courses or seminars are encouraged to take Course 1, unless they have sufficient mathematics background to take Course 15. Courses 15 and 16 focus on the mathematical theory that underlies statistical methods, without losing complete sight of applications to real data. Probability theory plays an important role for statistics, and while Courses 15 and 16 are self contained, students with a serious interest in probability and statistics should also take Course 14.

**1. Applied Statistics I.** The course facilitates understanding of data-based research. Observations on one variable can be described by the form of the distribution, average scores and measures of variation. Relations between variables are studied through correlational methods, including regression and analysis of variance. Ways of inferring from a sample of observed data to a larger population are discussed for the various descriptive techniques. The course does not satisfy any mathematics prerequisite, except for Math 2, nor can it be counted toward a major or minor in the Department.

No prerequisite.

*Fall semester.* Mr. Iversen.

**2. Applied Statistics II.** Given as a continuation of Math 1, the course deals mainly with the study of relations among three or more variables. Included are such topics as multiple regression analysis, with multiple and partial correlation, analysis of variance and the analysis of contingency tables. The course ends with a treatment of Bayesian statistical methods. The course does not satisfy any mathematics prerequisite nor can it be counted toward a major or minor in the Department.

Prerequisite: Math 1.

*Not offered in 1974-75.*

**3, 4. Probability and Calculus.** This course, which covers the basic concepts of probability theory and one variable calculus, is particularly useful for biology and social science majors. Topics to be included are discrete probability, sequences, series, differentiation, integration, transcendental functions, extremal problems, and an introduction to continuous probability and statistical techniques, as time permits.

*Year course.* Mr. Rosen.

**5A. Differentiation and Integration.** This is an introductory calculus course which presupposes such normal high school mathematics as algebra, analytic geometry, and elementary trigonometry. Derivatives and integrals of functions of one variable are studied in detail. Applications of the methods of calculus are given, when possible.

*Fall semester.* Staff.

**5B. Differentiation and Integration with Computer.** This is an introductory calculus course carrying 1½ credits which presupposes the same high school preparation as Math 5A. It will cover the same topics as in Math 5A, but will use APL notation along with the computer, in addition to the standard notation. Classes will meet four days a week in addition to a laboratory period.

*Fall semester.* Mr. England and Mr. Heckscher.

**7. Topics in The History of Mathematics.** This course examines in detail the various lines of mathematical thought in the late sixteenth and seventeenth centuries which have become central to present day mathematics.
Prerequisite: At least two years of high school mathematics, but excluding calculus, and consent of the instructor.
*Spring semester.* Mr. England.

**8. Finite Mathematics.** This is an elementary course covering a variety of topics of interest to social scientists and biologists. In both approach and subject matter it complements the Applied Statistics courses. Topics will be selected from logic, set theory, vectors and matrices, probability and Markov chains, linear programming, game theory, and graph theory.
No prerequisite.
*Fall semester.* Mr. Klotz.

**9. Foundations of Mathematics.** This course is designed to introduce prospective elementary school teachers to some of the mathematical concepts that appear in elementary school curriculum. Among the topics to be covered are the structure of the integers, rational numbers, sets and relations, and elementary number theory. In addition to discussions on how these mathematical concepts can be effectively taught in elementary school, students will be able to try out their ideas by teaching a class of elementary school students.
*Fall semester.* Mr. Rosen.

**11. Series and Linear Algebra.** This course is the normal sequel to Math 5. The first month is devoted to the study of infinite series and Taylor series. The remaining part of the course introduces the student to vector spaces, matrices, and linear transformations, with applications to the solution of systems of linear equations, determinants and the eigenvalue problem.
Prerequisite: Math 5. Freshmen who scored a grade of 3 or better on the AB Advanced Placement examination may begin with this course.
*Each semester.* Staff.

**11H. Computer Programming with Mathematics.** This half-credit course provides an introduction to computer programming using the APL and/or FORTRAN languages. It will draw upon calculus, statistics, and linear algebra for examples and problems.
Prerequisite: one course in mathematics.
*Fall semester.*

**12. Linear Algebra.** The course is designed for students who scored 3 or better on the BC Advanced Placement examination, or who have had a calculus course that included infinite series and Taylor series. The topics listed in Math 11 will then be considered in greater detail, and other topics such as dual spaces will be added.
Prerequisite: 3 or better on BC Advanced Placement; permission.
*Fall semester.* Staff.

**14. Probability.** This course deals with the mathematical theory and concepts of probability including an introduction to stochastic processes.
Prerequisite: Math 5, 22, or permission.
*Fall semester.* Mr. Klotz.

**15. Mathematical Statistics I.** Based on probability theory, this course examines estimation of parameters and hypotheses testing theory for statistical models used to gain knowledge from observed data. Both small and large

sample properties of the estimators are studied. The course concludes with the study of models dealing with relationships between variables, including chi-square and regression analysis.
Prerequisite: Math 5, 11, or permission.
*Fall semester.* Mr. Iversen.

**16. Mathematical Statistics II.** Given as a continuation of Math 15, the course deals mainly with statistical models used to analyze relations between variables. The general linear model, which includes regression, variance and covariance analysis, is examined in detail. It is also shown how non-parametric models are obtained using fewer assumptions. The course examines some sampling theory and alternative ways of performing statistical inference.
Prerequisite: Math 15.
*Not offered 1974-75.*

**22. Several Variable Calculus.** This course considers differentiation and integration of functions of several variables with special emphasis on two and three dimensions. It is the normal sequel to Math 11 and is a prerequisite for several other mathematics courses.
Prerequisite: Math 11, or 12.
*Each semester.* Staff.

**23. Higher Geometry.** Synthetic and analytic projective geometry will be considered axiomatically. Affine and Euclidean geometry will be developed as special cases.
*Spring semester.* Mr. Rosen.

**24. Introduction to Modern Algebra.** This course, which is offered in alternate years, is especially designed to accommodate those people who desire to be certified to teach mathematics in secondary school or who desire a brief introduction to modern algebra. The course will survey some of the important topics of modern algebra, such as groups, integral domains, rings, and fields.
Prerequisite: Math 11 or permission of the instructor.
*Fall semester.* Mr. Smith.

**27. Topics in Mathematics for the Behavioral Sciences.** This course will include such topics as optimization theory, graph theory, conflict resolution and queuing theory. Applications will be taken from psychology, anthropology, economics, political science, and sociology.
Prerequisite: Math 5 and 11 or permission of the instructor.
*Not offered 1974-75.*

**30. Differential Equations.** An introduction to differential equations that will include such topics as: first order equations, linear differential equations, approximative methods, some partial differential equations.
Prerequisite: Math 11.
*Each semester.*

**33. Graph Theory.** This course is an introduction to graph theory and its applications. Topics included will be chosen from the following: undirected and directed graphs; partitions, chains, and circuits; matrix representations. Applications of graph theory to the social sciences and environmental problems will be stressed.
Prerequisites: Math 11, or permission of the instructor.
*Spring semester.* Mr. Rosen.

**34. Numerical Methods.** This course will deal with the numerical solution of various mathematical problems, pure and applied. A laboratory period will be

included, using the computer.
Prerequisite: Math 11.
*Spring semester.*

**37. Number Theory.** The theory of primes, divisibility concepts, and the theory of multiplicative number theory will be developed. Potential secondary school teachers should find this course valuable.
Prerequisite: permission of the instructor.
*Not offered 1974-75.*

**41. Groups and Representations.** An introduction to the theory of abstract groups with application to such areas as symmetry groups, followed by the elements of representation theory.
Prerequisite: Math 11.

**42. Applied Modern Algebra.** Topics will be selected from such areas as Boolean algebras, finite state machines, programming languages, optimization and computer design, and coding theory.
Prerequisite: Math 11 or permission of the instructor.
*Spring semester.*

**44. Introduction to Real Analysis.** This course is designed for potential mathematics majors and minors to follow Course 22. Infinite series and Taylor series will be discussed rigorously. Other topics to be included are elementary point set theory and metric spaces, the Riemann integral, and the interchange of infinite processes.
*Each semester.* Mr. England.

**51. Applied Advanced Analysis I.** Analytic functions, integration and Cauchy's Theorem, power series, residue calculus, conformal mapping, and harmonic functions. The emphasis of this course is on applications to the physical sciences.
Prerequisite: Math 22.
*Fall semester.* Mr. Solomon.

**52. Applied Advanced Analysis II.** Fourier series, the Fourier transform, orthogonal functions, introduction to Hilbert space and operators. The motivation for these topics will be in partial differential equations arising in the physical sciences.
Prerequisites: Math 30; Math 51, or permission of the instructor.
*Spring semester.* Mr. Solomon.

**53. Topology.** This course is intended to bridge the gap between Advanced Calculus and certain topics in abstract mathematics. The topics covered will vary from year to year and will be selected from those topics in seminar 104.
*Fall semester.* Mr. England.

**57. Differential Geometry.** An introduction that will include surfaces, manifolds, curvature, Riemannian geometry. The algebra of tensors and differential forms will be developed as needed.
Prerequisite: Math 22.
*Spring semester.* Mr. Solomon.

**93. Directed Reading.**

**97. Senior Conference.** Normally required of all Course majors in their final semester, this half course is designed to give students an overview of all their courses by solving different types of mathematical problems.

Half course credit.
*Spring semester.*

HONORS SEMINARS

**101. Real Analysis.** This seminar concentrates on the careful study of the principles underlying the calculus of real valued functions of real variables.
*Spring semester.*

**102. Modern Algebra.** This seminar deals with the theoretical properties of such formal systems as groups, rings, fields and vector spaces. While these concepts will be illustrated by many concrete examples, the emphasis will be on the abstract nature of the subject.
*Fall semester.*

**103. Complex Analysis.** A brief study of the geometry of complex numbers is followed by a detailed treatment of the Cauchy theory of analytic functions of a complex variable. Various applications are given and some special classes of functions, such as elliptic functions, are studied. Analytic continuation and the theory of Weierstrass are also discussed.
Prerequisite: Math 22.
*Spring semester.*

**104. Topology.** The subject matter of this semester will include such topics as point set topology with some application, piecewise linear topology, homology and homotopy theory.
*Spring semester.*

**105. Probability and Statistics.** The purpose of this seminar is to give the mathematical background necessary for an understanding of the mathematical analysis of statistical data. In addition, the modern development of this subject provides a valuable application of the concepts and techniques acquired in the study of advanced calculus. The topics treated may include: the axiomatic approach, the use of Stieltjes integrals, correlation and regression, some special distributions, sampling theory, and a short introduction to the theory of statistical estimation.
*Fall semester.*

**107. Modern Analysis.** This seminar deals with the foundations of global analysis and includes some applications to mechanics. Honors majors may use this seminar instead of Mathematics 101 for their program, or take it in addition to Mathematics 101.

**108. Data Analysis.** This seminar is concerned with problems that arise in the handling of data. Among topics that will be included are curve fitting, numerical techniques of integration and differentiation, probabilistic methods in making models.
Prerequisites: Math 14, 51, or permission of the instructor.
*Spring semester.*

**109. Functional Analysis.** This seminar is intended for students of some mathematical maturity, and will be an introduction to some material that is important in present-day mathematics. Topics covered will include topological and metric spaces, measure theory, and elements of the theory of Banach spaces, Hilbert spaces, and topological vector spaces.
*Not offered 1974-75.*

# MEDIAEVAL STUDIES

*Coordinator:* PATRICK HENRY

This program offers an opportunity for a comprehensive study of European and Mediterranean civilization from the fourth century to the fifteenth. The period, which has a perceptible unity and a critical importance for the understanding of Western culture, can be approached only through a combination of several disciplines. Hence eight Departments (Art History, Classics, English Literature, History, Modern Languages, Music, Religion, and Philosophy) cooperate to provide a course of study which may be offered as a major in either Course or Honors.

For a major in Course the requirements are as follows:

1. Latin 14, Mediaeval Latin
   1 course in Mediaeval History (History 11 or 12)
   Either Religion 14/Philosophy 19 or History 14

   The prerequisites for the above courses are:
   Latin 1-2 or the equivalent; an introductory history course; Philosophy 1.
2. Five other courses chosen from three of the following fields:
   Art History (16, 17, 20).
   History (11, 12, 13, 14).
   Religion (12,14,15)
   Literature (Classics 35; English 19, 20, 31; CEL 13, 14; French 30; Spanish 30).
   Music (15).
   Other courses appropriate to Mediaeval Studies that are from time to time included in departmental offerings.
   Directed readings in mediaeval subjects.
3. A student may elect to write a thesis as a substitute for a course during the first semester of the senior year.
4. The student must pass a comprehensive examination in his senior year based on courses taken in the mediaeval field. Information about the form and scope of the comprehensive is included in a Handbook for Mediaeval Studies which interested students should obtain from the co-ordinator.

For a major in Honors the requirements are as follows:

1. The student must satisfy the language and distribution requirements of the program, as listed above, by appropriate courses or seminars. Some work in one or more of the fields included in the program must be done prior to admission to Honors.
2. Seminars may be chosen from the following: Philosophy 110 (Mediaeval Philosophy), History 111 (Mediaeval Europe), Art History 103 (Mediaeval Art), English 103 (Chaucer and Dante); French 100 (Littérature du Moyen-Age).
3. By attachments to the courses listed above, and by writing a thesis, the student may expand the possibility of work in Honors beyond these five seminars.

The minor program should be planned with the co-ordinator so as to insure a close relation to the major. No minor program in Honors is offered. Students wishing to minor in subjects included in this field should take them as minors in the department in which they are normally offered.

# MODERN LANGUAGES AND LITERATURES

GEORGE C. AVERY (German), *Professor; Chairman* 1975-76
HILDE D. COHN (German) *Professor* (part-time)
GEORGE KRUGOVOY (Russian), *Professor*
JEAN ASHMEAD PERKINS (French), *Professor*†
FRANCIS P. TAFOYA (French and Spanish), *Professor*
THOMPSON BRADLEY (Russian), *Associate Professor*
PHILIP METZIDAKIS (Spanish), *Associate Professor; Chairman,* 1974-75
ROBERT ROZA (French), *Associate Professor*†
SIMONE VOISIN SMITH (French), *Associate Professor**
EUGENE WEBER (German), *Associate Professor*
TATIANA M. COSMAN (Russian), *Assistant Professor* (part-time) *and Director of the Language Laboratory*
JOHN J. HASSETT (Spanish), *Assistant Professor*
LINDA ORR (French), *Assistant Professor*
MARIA SUAREZ (Spanish), *Assistant Professor*
JOËLLE L. STOPKIE (French), *Instructor*
ELKE PLAXTON (German), *Lecturer*
CLAUDE-MARIE GUÉGUEN (French), *Assistant*

The purpose of the major is to acquaint students with the important periods and principal figures of the literatures taught in the Department, to develop an appreciation of literary values, to provide training in critical analysis, and to foster an understanding of the interplay between literary phenomena and the historical and cultural forces underlying the various literary traditions. In addition to demonstrated competence in the language, a foreign literature major will normally complete five credits in advanced literature courses or seminars, take Special Topics if required by the section, and pass the comprehensive examination. Students whose interests lie primarily in language or civilization are advised to consider the possibility of a Special Major in combination with Linguistics, History, or some other appropriate department. Students interested in doing serious work in literature in more than one language are advised to consider a Literature major.

Courses numbered 1B through 6 are primarily designed to help students acquire the linguistic competence necessary to pursue literary studies in a foreign language through work with the language and selected literary texts. For a detailed description of the orientation in these courses see the Explanatory Note on language courses below. Courses numbered 11 or above stress the study of literature as a humanistic discipline as well as competence in the spoken and written language.

Students planning to major in a foreign language and its literature are advised to present enough credits (three to four years at the high school level) upon admission to enable them to register for courses numbered 11 and 12

†Absent on leave, spring semester, 1975.
*Director, fall 1974, Swarthmore Program in Grenoble.

in their freshman year or at the very latest by the beginning of the sophomore year. Students who enter with no previous knowledge of the language but who are interested in majoring in a foreign literature should register for intensive language courses (1B-2B) in their freshman year. Language courses numbered 1B through 5 do not count toward the minimum of eight courses required for the major.

Students who want to continue a language begun elsewhere will be placed at the course level where they will profit best according to the rating of the College Entrance Examination or placement tests administered by the Department.

Prerequisites for majors are noted under the listing of each of the literatures taught. Exceptions to course requirements are made for those who show competence in the language of specialization. Students who speak French, German, Russian or Spanish fluently should consult with the Department before electing courses.

Majors are urged (a) to elect supporting courses in other literatures (classical or modern), history, philosophy, linguistics and art history; (b) to investigate seriously the possibility of spending at least a summer and a semester abroad. Sophomores and juniors competent in French, whatever their major, but more specifically those in the humanities and social sciences, should consider the possibility of participating in the Swarthmore program at the University of Grenoble. Students competent in other foreign languages taught in the Department and interested in study abroad should consult departmental advisers familiar with programs abroad.

Students wishing to receive teaching certificates in French, German, Russian or Spanish should plan on taking the regular program of language and literature courses required for the major or show proof of the equivalent. In addition, they should take Linguistics 1 or a course in the history of the language, and courses in art, history, music, etc., to broaden their knowledge and understanding of the appropriate foreign culture. Prospective teachers of a foreign language are urged to include in their program at least a summer and a semester abroad.

Students planning to do graduate work are reminded that, in addition to the language of specialization, a reading knowledge of other languages is generally required for admission to advanced studies. Students who need advice concerning the choice of languages should consult with the Department.

## Continental European Literature

(Courses conducted in English)

Students acquainted with a particular foreign language would do best to elect the appropriate literature course taught in the original language and not the corresponding CEL 12 or CEL 50, though they might well take one in another literature. These courses may be used to satisfy the distribution requirements, but cannot be substituted for the 11 or 12 level courses in the original languages to satisfy the departmental prerequisites for a major or minor. The CEL 50s may in some cases form an appropriate part of the upper-level work in the major in one of the foreign literatures or serve as the basis of preparation for an Honors paper. Students planning programs where such considerations would apply must consult with the Department.

At least one of the CEL courses will be offered each semester; the proposed sequence for the academic year will be announced before fall registration. (Other foreign literature courses taught in translation are listed after SAL 50.)

**12F. Man and Society in French Literature.** An examination of the double tradition of introspective individualism and deep social concern—and the inevitable conflict between these impulses—in the works of such writers as Montaigne, Corneille, Molière, Diderot, Stendhal, Balzac, and Zola.

**12G. The Quest for a Tradition in German Literature.** An examination of German literature and thought from the 1770's to the end of the nineteenth century with emphasis on the emergence of characteristically German themes, forms and attitudes. Authors to be read include Goethe, Schiller, Herder, the Romantics, Büchner, Nietzsche, Wagner, Hauptman.

**12R. Russian Thought and Literature in the Quest for Truth.** The development of Russian intellectual tradition as reflected in Russian philosophy and literature from the 18th century to the present. Brief consideration of Russian medieval literature and thought. Historical and cultural consequences of the introduction of Christianity into Russia from Byzantium. Eighteenth century: secularization of culture. Nineteenth and twentieth centuries: philosophical and literary polemics within the framework of current secular ideologies and religious thought. Russia and the West and the dream of a Perfect World.

Mr. Krugovoy.

**12S. Individuality in Spanish Fiction.** A study of the struggle of the individual against the traditionalism of his society in Spanish literature from the Renaissance to the 20th century. Special attention will be given to the figures of the pícaro, la Celestina, Don Juan and Don Quixote.

**50F. Intellectual Trends in Twentieth Century French Literature.** Principal doctrines (Bergsonism, Surrealism, Marxism, Existentialism, Structuralism) as reflected in, or related to, the major literary or critical works and essays of writers such as Proust, Gide, André Breton, Louis Aragon, Malraux, Sartre, Camus, de Beauvoir, Roland Barthes, Claude Lévi-Strauss, or others. The stress for fall semester 1974 will be on Existentialism with some attention to its Marxist and Structuralist critics.

*Fall semester* 1974. Mr. Tafoya.

**50G. German Literature 1900-1950.** The reflection in German literature of the social and cultural crises that dominated the first half of the century. Works by Rilke, Thomas Mann, Hesse, Kafka, Musil, Sternheim, and Brecht.

*Fall semester* 1974. Mr. Avery.

**50R. Russian Literature and Revolutionary Thought.** A study of continuity and change; the relationship between the major political and social movements and the writers before and after 1917. Special attention will be given to the post-revolutionary literary and political struggle in the 1920's and the literary revival of the 1960's with emphasis on Herzen, Bakunin, Chernyshevsky, Trotsky, Babel, Olesha, Mayakovsky, Tertz, and Solzhenitsyn.

*Spring semester, 1975.* Mr. Bradley.

**50S. Spanish Thought and Literature of the Twentieth Century.** The struggle between traditionalism and liberalism, its background and manifestations in Spanish thought and letters from the turn of the century through the Civil War to the present day. Emphasis on Unamuno, Ortega y Gasset, Frederico García Lorca, Camilo José Cela, Carmen Laforet, and Juan Goytisolo.

*Spring semester, 1975.* Mr. Hassett.

**SAL 50. Contemporary Spanish-American Literature.** A consideration of intellectual and social themes and artistic innovations which mark the coming into the mainstream of Spanish-American fiction. Representative authors from the various national literatures. ARGENTINA: Borges, Cortázar; PERU: Vargas Llosa; COLOMBIA: García Márquez; GUATEMALA: Asturias; MEXICO: Fuentes, Rulfo, Pedro; CUBA: Carpentier. Includes some work with essayists such as Martínez Estrada, Paz; and poets: Neruda, Vallejo.

**13. Mediaeval Comparative Literature.** The tension between ideals and their realization as reflected in the literature of the Middle Ages, especially the epic (*Roland, Cid, Nibelungen*) and the romance (*Tristan, Yvain, The Grail*).

*Spring semester, 1976.* Mrs. Perkins.

**14. Late Mediaeval Literature.** The development of the comic mode and the introduction of prose as expressed in such works as *Reynard the Fox, The Book of Good Love,* chronicles, fabliaux and fables, and in such authors as Chaucer, Villon, and Boccaccio.

Mrs. Perkins.

**17. The Age of Enlightenment.** The intellectual history of the late 17th and 18th centuries in Europe as illustrated in selected work exemplifying such important themes as the rise of rationalism and its eventual decline, the opposing forces of optimism and pessimism, and new views of the nature of man and his place in society.

Mrs. Perkins.

**20G. German Fiction since 1945.** A study of intellectual, literary, and sociological currents in Germany, Austria, and Switzerland since the end of World War II as they appear in representative works of prose fiction. Authors include Th. Mann, Böll, Günter Grass, Max Frisch, Uwe Johnson, Th. Bernhard and Peter Handke. Lectures and discussions in English. German majors will be required to read part of the material in German.

*Spring semester,* 1975. Mr. Avery.

**34. Renaissance Comparative Literature.** See English Literature 34.

**48. Modern Drama.** See English Literature 48.

**53. Literary Modernism: Studies in the Novel.** (Also cross-listed as English 53.) An intensive study of the emergence of modernist fiction written in German and English. Authors to be read include Rilke, Joyce, Kafka, Faulkner, and Mann. A prior reading of Joyce's *Ulysses* and Mann's *Dr. Faustus* is strongly urged.

Mr. Avery and Mr. Weinstein.

EXPLANATORY NOTE ON FIRST AND SECOND-YEAR LANGUAGE COURSES:

a. Courses numbered 1-2, 3 are designed for students who begin their study of the language in college and whose primary interest is the acquisition of reading skills:

1-2 combines the presentation of grammar with readings from the humanities (including literature), social sciences and sciences. Classes meet three times per week and are conducted in English. May be used to prepare for fulfilling the reading requirement of graduate schools and may be followed by an additional semester of courses numbered 3, but does not prepare students for intermediate or advanced courses in literature taught in the original language.

3. builds upon 1-2 and is designed for students who want further practice in extensive reading. Students wanting to take the courses must indicate their desire to do so before spring registration. Taught only in response to manifest interest.

b. Courses numbered 1B-2B, 3B carry one and one-half credits per semester. Three semesters in this sequence are equivalent to two years of work at the college level. Designed to impart an active command of the language and combine the study or review of grammar essentials and readings of varied texts with intensive practice to develop the ability to speak the language. Recommended for students who want to progress rapidly and especially for those with no previous knowledge of the language and who are interested in preparing for intermediate or advanced courses in literature taught in the original language. Students who start in this orientation can major in a foreign language and literature not studied previously. These courses (a) meet as one section for grammar presentation and in small groups for oral practice with a native speaker of the language, and (b) may require periodic work in the language laboratory.

# French

French may be offered as a major in Course or as a major or minor in Honors. Prerequisites for both Course and Honors students are as follows: Prerequisites: French 6 and 12; the equivalent, or evidence of special competence.

Recommended supporting subject: see the introductory departmental statement.

Majors in Course and Honors, as well as minors in Honors, are expected to be sufficiently proficient in spoken and written French to do all of their work in French, i.e., discussions and papers in courses and seminars, and all oral and written examinations, including comprehensive and Honors examinations.

## COURSES

NOTE: Not all advanced courses are offered every year. Students wishing to major or minor in French should plan their program in consultation with the Department.

**1-2, 3. French Reading and Translation.** For students who wish to acquire the fundamentals of French grammar and a reading knowledge of the language. This is a terminal sequence. See the explanatory note on language courses above. 1-2 is a year course; not offered in 1974-75.

**1B-2B, 3B. Intensive French.** For students who begin French in college. Designed to impart an active command of the language. Combines the study of grammar with intensive oral practice, writing, and readings in literary or expository prose. Prepares for intermediate and advanced courses in literature taught in the original language. Recommended for students who wish to acquire minimal linguistic competence for study abroad in the program for foreign students. See the explanatory note on language courses above as well as the description of the Swarthmore program at the University of Grenoble under *Education Abroad*. Normally followed by 5.

**5, 5A. Composition and Diction.** Emphasis on oral fluency and writing proficiency. May be taken for single credit (5), or one and one-half credits with additional discussion sessions, (5A). Prepares for French 6 and 12 and recommended for students who wish to study abroad at the university level.
Prerequisite: French 3B or the equivalent.
*Each semester.*

**6. Studies in Stylistics.** For majors or those who wish an advanced course to develop self-expression in the written and oral language. Original compositions are based on a stylistic study of texts by representative French authors from the 18th century to the present. Generally taught in both fall and spring semesters.
Prerequisite: French 5, 12, or the equivalent with special permission.
*Each semester.*

**12. Introduction to Literary Studies.** An analytical approach to French literature through the study of particular genres or specific modes of expression. The topic for fall semester, 1974 is: *Littérature et critique sociale.* The relationship between literature and the historical evolution of French society from the *ancien régime* through the aftermath of the Revolution. Selected works from Molière to Balzac.
Prerequisite: French 5, a score of 675, or the equivalent with special permission.
*Each semester.*

**15. Freshman Seminar.** For freshmen only. Limited enrollment.
Prerequisite: a score of 675 or above in French, and special permission of the instructor. The topic for fall semester, 1974, will be announced.
*Fall semester, 1974.* Mr. Tafoya.

**20. History of the French Language.** The development of the French language from its Latin origins to its current forms. Emphasis will be placed more on general patterns than on philological details. Representative texts of the various periods will be analysed intensively. The course will be given in English; students must have a reading knowledge of French.

This course will satisfy the linguistics requirement for teacher certification.
*Spring semester, 1976.* Mrs. Perkins.

**28. La France Contemporaine.** A study of events and ideas which have shaped French society from the 19th century to the present. Selected French works in history, political science, sociology and literature. Emphasis on the evolution of governmental institutions, the changing educational system, the family, and the way the French look at themselves and the rest of the world.
Mrs. Smith.

**30. Littérature du Moyen-Age.** An introduction to old French will precede readings in the original which are representative of the most important attitudes of the 12th and 13th centuries: the feudal ethic *(La Chanson de Roland),* the courtly mode *(Yvain, Le Roman de la Rose)* and religious piety *(Le Miracle de Théophile).*
*Fall semester, 1975.* Mrs. Perkins.

**35. L'Humanisme de la Renaissance.** The evolution of French thought from the prose works of Rabelais to Montaigne's *Essais,* and a study of the poetry of Scève, Du Bellay, Ronsard, d'Aubigné.
Mrs. Smith.

**42. Le Classicisme.** Representative works of major 17th century writers, including the playwrights. Emphasis on the classical façade with a look at lesser known rebellious undercurrents.

*Spring semester, 1975.* Mrs. Smith.

**50. Le Roman du 18é Siécle.** Various novel forms of the 18th century will be studied including "mémoires" (Prévost, *Manon Lescaut* and Marivaux *La Vie de Marianne*), "roman épistolaire" (Rousseau, *La Nouvelle Héloise* and Laclos, *Les Liaisons dangereuses*), "conte philosophique" (Montesquieu, *Les Lettres persanes* and Voltaire, *Candide,* and *L'Ingénu*), and "narratif expérimental" (Diderot, *Le Neveu de Rameau* and *Jacques le fataliste*).

Mrs. Perkins.

**60. Le Roman du 19é Siécle.** A study of innovations in technique and form as well as the examination of moral problems arising from socio-political changes in 19th century France. Based primarily on the novels of Balzac, Stendhal, Flaubert, and Zola.

**61. Romantisme: Mages, sorcières et sauvages.** How modes of vision are practised, like magic, by poets, novelists and their protagonists who attempt the art of total transformation (revolution) whether in the context of sociology, history, or linguistics. The ambition of these modes—the complete and primal expression they posit—will be questioned. Works from Chateaubriand, Victor Hugo, George Sand, Jules Michelet, and Balzac, with some selections from other Romantic poets.

*Fall semester, 1974.* Miss Orr.

**65. Poésie Symboliste.** The evolution of symbolist aesthetics from Baudelaire through Apollinaire. Includes Rimbaud, Mallarmé, Verlaine, La-Forgue, and Valéry.

Mr. Roza.

**70. Théatre Moderne.** Major trends in 20th century drama with special emphasis on the works of Giraudoux, Anouilh, Sartre, Camus, and the Theatre of the Absurd.

*Fall semester, 1974.* Mr. Roza.

**71. Poésie Contemporaine.** Major poets after Apollinaire: includes the Surrealists (Breton, Reverdy, Eluard, Aragon and Char) as well as Saint-John Perse, Supervielle and representative poets since World War II (Guillevic and Bonnefoy).

**72. La Crise du Roman et de l'Humanisme.** Major trends in French fiction from 1900-1939 (the end of Naturalism, through Surrealism to the beginning of World War II). Essential works by authors such as Proust, Gide, Martin du Gard, Giono, Céline, Mauriac, Bernanos, Julien Green, Aragon, Valéry or others.

**73. Littérateurs Engagés.** A study of the literature of commitment before and after World War II. Principally an examination of the literary manifestations of French Existentialism. Includes works by Malraux, Sartre, de Beauvoir, Camus, and Frantz Fanon or others.

*Spring semester, 1975.* Mr. Tafoya.

**74. Le Nouveau Roman.** Twentieth-century innovations in narrative themes and techniques. Some attention to precursors of the *nouveau romanciers* such as Gide and Céline with principal emphasis on writers of the Post-World War II avant-garde: Butor, Duras, Simon, Sarraute, and Robbe-Grillet.

**91. Special Topics (for senior majors).** Study of individual authors, selected themes or critical problems.

*Spring semester* 1973.

**93. Directed Reading.**

**96. Thesis.** (One or two credits depending on project).

HONORS SEMINARS

**100. Littérature du Moyen-Age.** Old French readings in lyric poetry, theatre and romance.

Mrs. Perkins.

**101. La Renaissance.** Prose works of Rabelais, Marguerite de Navarre, and Montaigne. Poetic innovations from Marot through the Pléiade.

Mrs. Smith.

**102. Le Théâtre Classique.** 1. Aristotle, Corneille and Racine: a study of "the Tragic" and the theories of tragedy. 2. Molière.

Mrs. Smith.

**103. L'Age des Lumières.** Concentrating on Diderot and Rousseau.

Mrs. Perkins.

**104. Stendhal et Flaubert.**

*Spring semester, 1975.* Miss Orr.

**105. Proust.**

**106. Poésie Moderne.** Baudelaire, Rimbaud, Verlaine, Mallarmé, Claudel, Valéry.

*Fall semester, 1974.* Mr. Roza.

**108. Le Roman du 20é Siécle.**

Mr. Roza.

**180. Thesis.**

**182. Special Topics.** Study of individual authors, selected themes or critical problems not included in the regular program to satisfy the interest of students and instructors.

## German

German may be offered as a major in Course or as a major or minor in Honors. Prerequisites for both Course and Honors students are as follows:

Required: German 11 or 12, or equivalent work.

Recommended supporting subjects: see the introductory departmental statement.

Majors are expected to speak German with sufficient fluency to take part in discussion in courses and seminars in the language and to pass oral examinations in German.

COURSES

NOTE: Not all advanced courses or seminars are offered every year. Students wishing to major or minor in German should plan their program in consultation with the Department.

**1-2, 3. German Reading and Translation.** For students who wish to acquire the fundamentals of German grammar and a reading knowledge of the language. This is a terminal sequence. See the explanatory note on language courses above. 1-2 is a year course.

**3. Expository Prose.** German Prose from the humanities and from the social and natural sciences. The selection of texts to be read will be based on students' interests and needs.

Prerequisite: German 1-2 or comparable preparation.

*Fall semester, 1974.* Mr. Weber.

**1B-2B, 3B. Intensive German.** For students who begin German in college. Designed to impart an active command of the language. Combines the study of grammar with intensive oral practice, writing, and readings in literary or expository prose. See the explanatory note on language courses above. Normally followed by 6, 11 or 12.

**4. Intermediate German.** For entering students with high school language training and for whom the "B" sequences or German 6 would not be appropriate. Review of grammar, literary readings of moderately difficult texts, such as Hesse's *Knulp,* Brecht's *Kalendergeschichten,* Durrenmatt's *Der Besuch der alten Dame,* and Kafka's Der Landarzt; poems and examples of expository prose. Normally followed by German 6 or 12. Admission contingent upon departmental testing or permission of the instructor.

*Fall semester, 1974.* Mr. Avery.

**5. Readings in German Literature.** A study of German texts (prose narratives, dramas and poems) for the purpose of developing reading skills and of improving aural comprehension. All work is done in German.

Prerequisite: German 4 or equivalent preparation.

**6. Writing and Speaking German.** Oral discussions and writing practice based on general and literary topics of contemporary interest. For students who want to consolidate their skills of expression.

Prerequisite: German 3B or 4; or by departmental placement test.

*Spring semester, 1975.* Miss Cohn.

**11. Introduction to German Literature (early 20th century).** An introductory course which emphasizes critical and analytical reading of literature. Representative poetry, drama, and fiction from the first third of the 20th century will include several works each by Kafka and Brecht.

Prerequisite: German 3B or 6; the equivalent, or permission of the instructor.

*Fall semester, 1974.* Mr. Avery.

**12. Introduction to German Literature (Goethe and his Age).** A study of works by Lessing, Goethe, and Schiller. Discussion, papers. Not a survey course.

Prerequisite: German 3B or 6; the equivalent, or permission of the instructor.

*Spring semester, 1975.* Mr. Weber.

**21. Die Deutsche Novelle seit Goethe.** Also taught as a seminar. See German 110 below.

Miss Cohn.

**22. Studies in German Poetry.** Also taught as a seminar. See German 111 below.

Mr. Weber.

**23. Die Deutsche Komödie.** Also taught as a seminar. See German 109 below.

**61. Goethes Faust, Erster und Zweiter Teil.** An intensive study of *Faust I* and *II*. Also for students who only know *Faust, Part One*.
Mr. Weber.

**62. Die Deutsche Romantik.** Also taught as a seminar. See German 105 below.
Miss Cohn.

**70. Märchen-Parabeln-Novellen.** Characteristic differences of the three genres will be studied in works from the Enlightenment to the present time. The interrelation of literary skills and the presentation of myth, fantasy, and reality will form the basis of the course.
*Fall semester, 1974.* Miss Cohn.

**71. Kafka und Brecht.** A study of the principal works of each author with stress on the interpretation of major themes and the examination of literary craftsmanship. Includes consideration of the cultural and social environment in which the works were written.
Mr. Avery.

**72. Herman Hesse.** A study of the central themes and the development of narrative technique in Hesse's novels. Works to be examined will include: *Knulp, Demian, Siddhartha, Der Steppenwolf,* and *Die Morgenlandfahrt.*
Prerequisite: German 11 or 12. Meets 1½ class hours per week.
Offered by special arrangement. Half-course.
Mr. Avery.

**81. Colloquium.** Offered from time to time in response to student and faculty interests. Devoted to an intensive examination of subjects or topics not covered in the regular program. Enrollment is limited and subject to departmental approval.

**91. Special Topics (For senior majors).** Study of individual authors, selected themes or critical problems.

**93. Directed Reading.**

### Honors Seminars

**103. Deutsches Barock und Aufklaerung.** A study of German literature in the 17th and early 18th centuries. The lyric poetry of the period, the mysticism of Angelus Silesius and Jakob Böhme, the plays of Gryphius, and the prose of Grimmelshausen; a study of Lessing.

**104. Goethe.** A study of Goethe's major works (excluding *Faust*) in the context of his life and times.
*Fall semester, 1974.* Mr. Weber.

**105. Die Deutsche Romantik.** Romanticism as the dominant movement in German literature, thought, and the arts in the first third of the 19th century. Authors include Tieck, Novalis, Hölderlin, Kleist, Brentano, Eichendorff, the early Büchner, and Heine.
Mr. Avery.

**107. Moderne Prosa.** The development of German prose fiction since 1900 as reflected in works by Schnitzler, Hofmannsthal, Rilke, Mann, Kafka, Döblin, and Grass.

*Spring semester* 1975. Mr. Avery.

**108. Das Deutsche Drama.** Representative examples of the dramatic genre in German literature from the end of the 18th century to the present.

**109. Die Deutsche Komödie.** Outstanding comedies from Goethe to the present time will be studied in their own right, as examples of the genre, and as illustrations of German intellectual history.

**110. Die Deutsche Novelle.** A study of significant examples of this typically German genre. Authors: Goethe, Eichendorff, Kleist, Stifter, Keller, Thomas Mann, and contemporary writers.

**111. Studies in German Poetry.** A study of selected examples of German poetry from the Baroque period to the present time. The interrelation of *Aussage, Gehalt und Gestalt.*

**112. Modernes Drama und Lyrik des XX. Jahrhunderts.** The emergence of modern trends as reflected primarily in the poetic and dramatic works of Hauptmann, George, Hofmannsthal, Rilke, Trakl, Sternheim, Benn, and Brecht. Miss Cohn.

## Italian

Under a special exchange program with Widener College (Chester, Pennsylvania), courses in elementary and intermediate Italian will be offered on a schedule alternating classes at Swarthmore and Widener each semester. Students who wish to study Italian literature may do so at Bryn Mawr College.

### Courses

**1-2. Elementary Italian.** A multiple approach to language learning and an introduction to Italian culture and civilization through graded readings. Students are introduced to the fundamentals of Italian linguistics; they are at the same time drilled in dictation and are given elements of grammar and rudiments of composition. Attendance at the Language Laboratory is mandatory.

*1974-75 and annually thereafter.* Mr. Melzi. Italian 1 given at Swarthmore; Italian 2 given at Widener.

**3, 4. Intermediate Italian.** A thorough review of Italian grammar and Italian linguistics conducted exclusively in Italian. An introduction to all elements of Italian culture and civilization through reading of graded literary texts and cultural material.

*1975-76 and annually thereafter.* Mr. Melzi. Italian 3 given at Widener; Italian 4 given at Swarthmore.

## Russian

Russian may be offered as a major in Course or as a major or minor in Honors. Prerequisites for both Course and Honors students are as follows:

Required: Russian 12 and 13, or evidence of equivalent work.

Recommended supporting subjects: see the introductory departmental statement.

COURSES

Note: Not all advanced courses or seminars are offered every year. Students wishing to major or minor in Russian should plan their program in consultation with the Department.

**1-2, 3. Russian Reading and Translation.** For students who wish to acquire the fundamentals of Russian grammar and a reading knowledge of the language. The first year will be devoted primarily to grammar and the third semester to reading and translation. (Refer to the explanatory note on language courses above).

**1B-2B, 3B. Intensive Russian.** For students who begin Russian in college. Designed to impart an active command of the language. Combines the study of grammar with intensive oral practice, writing, and readings in literary or expository prose. See the explanatory note on language courses above. Normally followed by 6 and 12.

**5, 5A; 6. Advanced Russian.** For majors and those primarily interested in perfecting their command of language. Advanced conversation, composition, translation and stylistics. Readings of dramas and newspapers. Conducted in Russian. May be offered with drill section (5A) for additional one-half course credit.

*Fall and spring semesters.* Mr. Krugovoy.

**12. Introduction to Russian Literature.** A survey of Russian literature of the 19th and 20th centuries to 1918. Includes Romanticism, Realism and literary tendencies in the first two decades of the 20th century. Works by Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, Tolstoy, Chekhov, Gorky, Bunin and Belyi. Readings and class discussions in Russian.

*Fall semester.* Mr. Krugovoy.

**13. The 19th Century Russian Novel.** The development of the novel in the 19th century through an integrated analysis of the society and of representative works by such authors as Dostoevsky, Gogol, Goncharov, Tolstoy, and Turgenev. Lectures and reading in English. Russian majors will be required to read a part of the material in Russian. Given in alternate years.

*Fall semester,* 1974. Mr. Bradley.

**14. The 20th Century Russian Novel.** Continuity and change in the novel after the turn of the century, with particular emphasis on the post-revolutionary period. Analysis of social-political developments and of major works by such writers as Gorky, Kuprin, Bely, Zamyatin, Sholokhov, Bulgakov, and Solzhenitsyn. Lectures and reading in English. Russian majors will be required to read a part of the material in Russian. Given in alternate years.

*Fall semester,* 1975. Mr. Bradley.

**15. Poetry and Poetics.** A study of the major literary theories and movements from the late 19th century through the post-revolutionary period with emphasis on Symbolism, Russian Formalism, and Futurism. Readings in Russian. Lectures and discussion in English.

**16. History of the Russian Language.** An introductory course. A study of the origin of the Russian language and its place among the other modern Indo-European and Slavic languages. The uses of philology and linguistics for the ideological and stylistic analysis of literary texts. The Kievan State: its cultural development and the formation of the Old Russian literary language. The Muscovite period and the Russian literary language of the sixteenth century. The

chancery language. The linguistic revolution of the seventeenth century. The evolution of literary Russian until the nineteenth century. Grammatical, lexical and stylistic contribution of Old Colloquial Russian and Old Church Slavonic to the shaping of Modern Literary Russian.

*Spring semester,* 1975. Mr. Krugovoy.

**17. Masterpieces of the Russian Medieval Period and the 18th Century.** Reading of selected Old Russian and eighteenth century literary, legal and administrative texts. Linguistic, literary-critical and cultural-historical analysis. The course is conceived as a non-obligatory supplement to 16. Students who do not take 16 but are interested in Russian literature and history of those periods may read respective texts in modern Russian translation.

*Spring semester,* 1975. Mr. Krugovoy.

**18. Russian Folklore.** Readings in Russian folklore combining lectures of a theoretical nature with practical analysis of different genres of folklore: riddles, proverbs, ritual poetry, heroic songs, folktales, lyric tales, etc. Relation between Russian folklore and literature. This course may be especially interesting for those students who have had History of the Russian Language.

**91. Special Topics.** (For senior majors). Study of individual authors, selected themes or critical problems.

**93. Directed Reading.**

### Honors Seminars

**101. Tolstoy.**
*Fall semester,* 1974. Mr. Krugovoy.

**102. Russian Short Story.**
*Spring semester,* 1975. Mr. Bradley.

**103. Pushkin and Lermontov.**

**104. Dostoevsky.**

**105. Literature of the Soviet Period.**

**106. Russian Drama.**

**107. Russian Lyrical Poetry.**

**108. Modern Russian Poetry.**

## Spanish

Spanish may be offered as a major in Course or as a major or minor in Honors. Prerequisites for both Course and Honors students are as follows:

Required: Spanish 11 and 12, or equivalent work.

Recommended supporting subjects: see the introductory departmental statement.

Majors are expected to speak Spanish with sufficient fluency to take part in discussion in courses and seminars in the language and to pass all oral comprehensive or oral Honors examinations in Spanish.

### Courses

Note: Not all advanced courses are offered every year. Students wishing to major or minor in Spanish should plan their program in consultation with the Department.

**1-2, 3. Spanish Reading and Translation.** For students who wish to acquire the fundamentals of Spanish grammar and a reading knowledge of the language. This is a terminal sequence. See the explanatory note on language courses above.

**1B-2B, 3B. Intensive Spanish.** For students who begin Spanish in college. Designed to impart an active command of the language. Combines the study of grammar with intensive oral practice, writing, and readings in literary or expository prose. See the explanatory note on language courses above. Normally followed by 6, 11 or 12.

**5, 6. Composition and Diction.** For majors and others who wish advanced courses in which the emphasis is not primarily literary. An effort is made to correct faulty pronunciation and to improve self-expression in the language both oral and written.

Mr. Hassett.

**11. Introduction to Spanish Literature.** A study of representative prose fiction, poetry and drama of the 19th and 20th centuries (works by authors such as Espronceda, Zorrilla, Bécquer, Pérez Galdós, Unamuno, Baroja, Lorca, etc.) Discussion, papers.

Prerequisite: Spanish 3B, the equivalent, or special permission.

*Fall semester, 1974.* Mr. Metzidakis.

**12. Introduction to Spanish Literature.** A study of representative prose fiction, poetry and drama from the later Middle Ages through the Golden Century (authors to be read include: Jorge Manrique, *Romances,* Cervantes, Lope de Vega, Calderón, Quevedo, etc.). Discussion, papers.

Prerequisite: Spanish 3B, the equivalent, or special permission.

*Spring semester, 1975.* Mr. Hassett.

NOTE: Spanish 11 and 12, the equivalent, or consent of instructor, are prerequisite for the courses in literature that follow.

**30. La Literatura Medieval.** From the *Poema del Cid* to *La Celestina.* Also included are works by Gonzalo de Berceo, Don Juan Manuel, el Arcipreste de Hita, and Jorge Manrique.

Mr. Metzidakis.

**40. El Teatro del Renacimiento y del Siglo de Oro.** Special emphasis will be placed on the outstanding dramatists of the Golden Century (Lope de Vega, Tirso de Molina, Ruiz de Alarcón, Caldéron, etc.)

**42. La Poesía del Renacimiento y del Siglo de Oro.** From the *Romancero* through the Baroque. Special emphasis on Garcilaso de la Vega, Herrera, Fray Luis de León, San Juan de la Cruz, Lope de Vega, Quevedo and Góngora.

**44. Cervantes.** The works of Cervantes with special emphasis on the *Quijote.*

**60. La Novela en el Siglo XIX.** Realism and Naturalism in 19th century prose fiction. Works by Alarcón, Valera, Pérez Galdós, Pardo Bazán, Clarín, Blasco Ibáñez and others.

*Fall semester, 1974.* Mr. Metzidakis.

**70. La Generación del 98.** Studies in the works of Valle-Inclán, Azorín, Baroja, Unamuno, Benavente and Antonio Machado.
Mr. Metzidakis.

**71. Literatura Española Contemporánea.** Major figures of the 20th century not covered in Spanish 70: Juan Ramón Jiménez, García Lorca, Alberti, Salinas, Guillén, Hernández, Hierro and Aleixandre among the poets; novels by Cela and Goytisolo; the theater of Casona and Sastre.
Mr. Metzidakis.

**75. Literatura Hispanoamericana.** Representative works of late 19th and early 20th century writers, with stress on the latter. Included are: Martí, Darío, Rodó, Lugones, Barrios, Rivera, Uslar Pietri, Alegría, Azuela or others.

**76. La Poesía Hispanoamericana en el Siglo XX.** A study of the poetry of Mistral, Agustini, Ibarbourou, Storni, Vallejo, Huidobro, Gorostiza, Paz, Nicolás Guillén, Neruda, Borges, and others.

**77. La Novela Hispanoamericana en el Siglo XX.** Works by Mallea, Sábato, Cortázar, Carpentier, Asturias, Rojas, Vargas Llosa, Rulfo, Fuentes, García Márquez, or others.
*Fall semester,* 1974. Mr. Hassett.

**78. La Novela Mexicana Social del Siglo XX.** An examination of the principal problems confronting Mexican society from the end of the "Porfiriato", through the revolutionary and post-revolutionary periods as reflected primarily in the novels of authors such as Azuela, Carlos Fuentes, Guzmán, G. López y Fuentes, José Rubén Romero, Rulfo, and Yáñez, but also includes essays by C. Fuentes, Octavio Paz, Samuel Ramos, Alfonso Reyes, Vasconcelos, or others.
*Spring semester* 1975. Mr. Tafoya.

**81. Colloquium.** Offered for double credit and devoted to the intensive investigation of subjects or topics not covered by the regular program. Enrollment is limited and subject to departmental approval.

**91. Special Topics (for senior majors).** Study of individual authors, selected themes or critical problems.

**93. Directed Reading.**

HONORS SEMINARS

**108. Las Obras de Cervantes.**

**109. La Generación del 98:** Valle-Inclán, Azorín, Baroja, Unamuno, Maeztu, Benavente, Antonio Machado.

**110. Literatura Española Contemporánea.**

**111. La Poesía Hispanoamericana en el Siglo XX.**

**112. La Novela Hispanoamericana en el Siglo XX.**

**113. El Teatro del Renacimiento y del Siglo de Oro.**

**114. La Poesía del Renacimiento y del Siglo de Oro.**

# MUSIC

PETER GRAM SWING, *Professor and Acting Chairman*†
JAMES D. FREEMAN, *Associate Professor and Chairman**
CHARLES GOWER PRICE, *Assistant Professor*
DAVID H. STEINBROOK, *Assistant Professor*
JANE A. COPPOCK, *Lecturer*
ROBERT M. SMART, *Associate in Performance*
DOROTHY K. FREEMAN, *Associate in Performance*

The study of music as a liberal art requires an integrated approach to theory, history and performance, experience in all three fields being essential to the understanding of music as an artistic and intellectual achievement. Theory courses train the student to work with musical material, to understand modes of organization in composition and to evolve methods of musical analysis. History courses and seminars introduce students to methods of studying the development of musical styles and genres, and the relationship of music to other arts and areas of thought. The department encourages students to develop performing skills through private study and through participation in the orchestra, chorus and chamber music coaching program which it staffs and administers. Scholarships are available to assist instrumentalists or singers finance the cost of private instruction. Credit may be granted under the provisions for Creative Arts.

Students wishing to combine instrumental or vocal studies outside the College with a major in music at Swarthmore can, with special permission from the department and the Provost, elect a five-year plan of study, thus reducing the normal number of courses to be taken per semester.

Two semester courses in theory and one semester course in history are prerequisite for acceptance as a major. Majors will normally take five semester courses in theory (including Music 61), three semester courses in history (including Music 15, 16), and meet the basic piano requirement.

*Major in Honors:* A student intending to major in Honors will generally stand for four papers in music. The department strongly recommends that one paper be a thesis or research project. Music 61, 62, may be used as the basis of a paper. Papers in history can be prepared by taking a history course with a concurrent or subsequent attached unit of additional research, or by directed reading, or by a tutorial.

*Minors in Honors:* A student intending to minor in Honors will generally stand for two papers in music. Two semester courses in theory and one semester course in history are prerequisite for a minor. Music 2 may, with permission of the department, be substituted for the theory prerequisite.

*Language Requirements for Graduate Schools:* Students are advised that graduate work in music requires a reading knowledge of French and German. A reading knowledge of Latin is also desirable for students planning to do graduate work in musicology.

*Proficiency on an instrument:* All majors in music will be expected to play a keyboard instrument well enough to perform at sight a two-part invention of J. S. Bach and a first movement of an easy late 18th or early 19th century sonata. By the end of the junior year they should be able to read chamber music scores,

†Absent on leave, spring semester, 1974-75.
*Absent on leave, fall semester, 1974-75.

vocal music in four clefs, and realize figured basses. The department recommends that majors take one or two semesters of Music 39 to develop these skills. Students with exceptional proficiency in an instrument other than the piano, or in singing, will not be expected to meet the performing standards of pianists.

*The basic piano program:* This program is designed to develop keyboard proficiency to a point where a student can effectively use the piano as a tool for study, also to help students meet the keyboard requirements outlined above. It is open to freshmen and sophomores planning to major in music. No academic credit is given for basic piano.

### Credit for Performance

A student who has taken or is taking Music 1, Music 2, or Music 11-12, (or who has equivalent prior training) has the option to receive credit for study of an instrument or voice, participation in the department's chamber music coaching program, participation in the Swarthmore College Orchestra, and participation in the Swarthmore College Chorus. The amount of credit received will normally be a half-course in any one semester, and will usually be granted only to students participating for a full year in a particular activity. Students applying for credit will be given an audition at the beginning of the semester and will fulfill requirements established for each activity, i.e., regular attendance at rehearsals and performances and participation in any supplementary classes held in connection with the activity. Students will be graded on a credit/no credit basis, and will be expected to provide written commentary and evaluation of their own work during each semester.

A student applying for credit for study of an instrument or voice will first demonstrate to the department his ability to undertake such study at least at an intermediate level. He will arrange to work with a teacher of his choice, subject to approval of the department. The department will then supervise the course of study in any semester for which credit is to be given. The teacher will submit a written report of the student's work at the close of the semester to be used by the department in making its evaluation. The department views instruction as related to performance. Each student will be expected to perform in one or more concerts (formal or informal) during the semester in which credit is applied for. The College does not undertake to pay for instruction; the student is expected to make his own financial arrangements directly with the teacher.

### Courses and Seminars

**1. Introduction to Music.** A course designed to teach intelligent listening. The course assumes no prior training in music.
Open to all students without prerequisite.
*Not offered 1974-75.*

**2. Introduction to Music.** A course that approaches listening and analysis through concentration on musical fundamentals: reading notation and developing or expanding aural perception of pitch, rhythm, structure, phrasing and instrumentation. The course assumes no prior training in music.
Open to all students without prerequisite.
*Spring semester.* Mr. Freeman.

**4. Urban Folk Music (I).** An examination of American and British rock music from *circa* 1954 to the present, with particular attention to its musical origins and its cultural implications. The course will include music by Chuck Berry, the Beatles, the Rolling Stones, Bob Dylan and Leon Russell, among others. The course assumes no prior training in music and is open to all students without prerequisite.
*Fall semester.* Mr. Price.

**5. Urban Folk Music (II).** An examination of American blues, jazz, country-western and folk protest from the beginning of the phonodisk industry to *circa* 1954. The course will be concerned with selected recorded examples, including the music of Robert Johnson, Bessie Smith, Louis Armstrong, Jimmie Rodgers, Woody Guthrie, Billie Holiday, Charlie Parker, Muddy Waters and others. The course assumes no prior training in music and is open to all students without prerequisite.

*Spring semester.* Mr. Price.

## Theory and Composition

### THE THEORY CYCLE

The theory cycle is a series of three full-year courses normally taken in sequence. These courses integrate issues that are usually presented in isolation. Work in counterpoint, harmony, orchestration, strict composition, sight-singing, dictation, conducting, analysis and theory construction is coordinated with the study of pre-tonal, tonal and post-tonal compositions, questions of performance practice, aesthetics and the philosophy of music being raised where appropriate.

Students entering the cycle are expected to know traditional rhythmic notation, major/minor scales, and be able to play or sing at sight simple lines in treble and bass clef.

Music 13-14 and 61, 62 can be taken concurrently by students beginning the cycle in their junior year, but only with permission of the department.

**11-12. First Year Theory.** Two lectures, two drill sections per week. Fundamentals of tonal counterpoint and harmony. Written musical exercises include composition of original materials as well as commentary on excerpts from the tonal literature. Listening assignments coordinated with written work.
Prerequisite: Music 2 (or the equivalent).

*Year course.* Mr. Steinbrook.

**13-14. Second Year Theory.** One double lecture, one section per week. Continued work with the tonal literature at an intermediate level. Detailed study of selected works with assignments derived from these works.
Prerequisite: Music 11-12 (or the equivalent).

*Year course.* Miss Coppock.

**61, 62. Third Year Theory.** Two meetings per week. Detailed study of a limited number of works both tonal and non-tonal, with independent work encouraged.

Prerequisite: Music 13-14 (or the equivalent).

*Year course.* Mr. Steinbrook.

### COMPOSITION

**41. Composition.**

*Both semesters.* Mr. Steinbrook.

## History of Music

**15. Introduction to the History of Music (I).** Topics in music of the Middle Ages and the Renaissance, with emphasis given to the analysis and performance of selected compositions. This course is also concerned with studying the relationship of music to the art and thought of the times, and the function of music in the Roman Catholic liturgy.

Prerequisite: Music 2 (or the equivalent).

*Fall semester.* Mr. Swing.

**16. Introduction to the History of Music (II).** Topics in music of the 17th, 18th and 19th centuries.

Prerequisite: Music 2 (or the equivalent).

*Spring semester.* Mr. Price.

**22. Contemporary Music.** An examination of a selected group of compositions. Rather than attempt a survey based on stylistic considerations, or an aesthetic evaluation, the course will deal with the analysis of individual solutions to common compositional problems. The course will be especially concerned with music written after 1960.

Prerequisite: Music 2 (or the equivalent).

*Not offered 1974-75.*

**27. J. S. Bach.** A study of representative compositions (including the Mass in B minor and the Passion according to St. Matthew) coordinated with readings in primary and secondary sources. A reading knowledge of German will be helpful.

Open to students with permission of the instructor.

*Not offered 1974-75.* Mr. Swing.

**28. W. A. Mozart.** A study of representative works in the light of modern style criticism. A reading knowledge of French or German is desirable.
Open to students with permission of instructor.

*Not offered 1974-75.* Mr. Swing.

**31. Opera.** An examination of the problems and relationship of opera and drama. Two works will be studied in detail and, hopefully, produced. Other operas from various periods will be examined in terms of the musico-dramatic problems encountered in the two works to be produced.
Prerequisite: Music 1 or Music 2, and some vocal, dramatic or instrumental ability.

*Not offered 1974-75.* Mr. Freeman.

**32. History of the String Quartet.** This course traces the development of the string quartet from the middle of the 18th century to the present through study and (wherever possible) performance of selected works.
Open to students with permission of the instructor.

*Not offered 1974-75.* Mr. Swing.

**40. Analysis, Research, Performance.** An examination of the relevances of analytical and historical research to intelligent performance through study of selected compositions. Ability to perform instrumentally or vocally is required, though it need not have reached an exceptionally skilled level.

*Spring semester.* Mr. Price.

**42. Lieder.** A study, through performance and analysis, of various solutions by various composers to the problems of relating text and music. Students should be moderately proficient either as singers or as pianists. A knowledge of German is required.

*Not offered 1974-75.* Mr. Freeman.

**43. Early Nineteenth Century Romanticism.** A study of the origins and rationale of musical Romanticism in the first half of the 19th century. A reading knowledge of French or German will be very helpful.

*Spring semester.* Mr. Freeman.

**44. Baroque Performance Practice.** A scholarly approach to performance of instrumental and vocal music from 17th and early 18th century Europe through examination and application of various source material concerned with improvising techniques, ornamentation, articulation and dance rhythms. Ability to perform instrumentally or vocally is required, though it need not have reached an exceptionally skilled level.
*Fall semester.* Mr. Price.

**92. Independent Study.**

**93. Directed reading.**
Staff.

**95. Tutorial.** Special work in composition, theory, or history. One or two credits.
Staff.

**96. Senior Thesis.**
One or two credits.
*Fall and spring semesters.* Staff.

PERFORMANCE

NOTE: All performance courses are for half-course credit per semester. See p. 72 and p. 168 for general provisions governing work in performance under the provisions for Creative Arts.

**34. Performance (chamber music).**
*Both semesters.* Ms. Freeman.

**35. Performance (orchestra).**
*Fall semester,* Mr. Steinbrook. *Spring semester,* Mr. Freeman.

**36. Performance (chorus).**
*Fall semester,* Mr. Swing. *Spring semester,* Mr. Steinbrook.

**37. Individual Instruction.**
*Both semesters.*

**39. Figured Bass and Score Reading.**
*Both semesters.* Mr. Smart.

# PHILOSOPHY

HUGH M. LACEY, *Associate Professor and Chairman*
KENNETH I. MILLS, *Visiting Associate Professor*
HANS OBERDIEK, *Associate Professor*
CHARLES RAFF, *Associate Professor**
RICHARD SCHULDENFREI, *Associate Professor*‡
ALLAN GOTTHELF, *Visiting Assistant Professor*
DAVID LACHTERMAN, *Assistant Professor*†
GILMORE STOTT, *Lecturer*

Students majoring in philosophy must complete at least one course or seminar in each of these areas: (1) Logic, (2) Ancient or Modern Philosophy, and (3)

*Absent on leave, fall semester, 1974-75.
†Beginning spring semester.
‡Absent on leave, 1974-75.

Moral or Social Philosophy. Prospective majors should complete the Logic requirement as early as possible. Mastery of at least one foreign language is strongly recommended. Students majoring in Course may be required to elect Philosophy 97.

**1. Introduction to Philosophy.** Philosophical literature and methods of investigation are introduced through discussion of typical philosophical problems, such as: the problem of freedom, the arguments for the existence of God, the nature of logic and mathematics, the sources and limits of human knowledge, the justification of moral judgments. Readings include classical and current sources.

Introduction to Philosophy is a prerequisite for all other philosophy courses except Logic.

*Each semester.* The staff.

**1A. Freshman Seminar in Moral Philosophy.** A seminar open only to freshmen, an alternative to Philosophy 1. Enrollment limited to eight students.

*Spring semester.* Mr. Stott.

**10. The Nature and Methods of Inquiry.** From the perspectives of their fields the instructors in this course will explain and critically examine the methodological foundations of the various disciplines they represent. At the same time an attempt will be made to compare and relate methodology and substantive problems of different disciplines with the goal of arriving at a coherent view of scientific inquiry. The emphasis given to different disciplines will vary depending on the composition of the staff.

*Not offered 1974-75.* Interdepartmental staff.

**11. Ethics.** A study of the principal theories about value and moral obligation, and of their justification. The emphasis is systematic, but works of leading ethical philosophers, both classical and contemporary, will be read as illustrations of the major theories.

*Spring semester.* Mr. Oberdiek.

**12. Logic.** An introduction to the principles of deductive logic with equal emphasis on the syntactic and semantic aspects of logical systems. Topics include the notions of logical truth, logical consequence, and proof. Some attention is given to the development of axiomatic theories and selected topics in the philosophy of logic.

*Fall semester.* Mr. Lacey.

**13. Modern Philosophy: Descartes Through Kant.** A history of modern philosophy is presented through the metaphysical and epistemological problems common to Descartes, Leibniz, Spinoza, Locke, Berkeley, Hume, and Kant.

*Spring semester.* Mr. Raff.

**14. Ancient Philosophy.** The development of Greek philosophy from its sixth-century B.C. beginnings to the thought of Plato and Aristotle, with some attention to its impact on Western culture and its relation to subsequent (and contemporary) developments in philosophy. Emphasis is on understanding and critically evaluating the teachings of Plato and Aristotle on fundamental issues of metaphysics, epistemology, psychology, and ethics.

*Fall semester.* Mr. Gotthelf.

**16. Philosophy of Religion.**

*Not offered 1974-75.*

**17. Aesthetics.**

*Spring semester.* Mr. Mills.

**18. Philosophy of the Social Sciences.** Philosophical problems which arise in the application of scientific methods to human behavior; i.e., problems concerning concepts, laws, theories, values, explanation and prediction in the social sciences and history; and the differences and similarities between social and natural science.

*Not offered 1974-75.* Mr. Schuldenfrei.

**19. Medieval Philosophy.** See Religion 14.

*Fall semester.*

**21. Social and Political Philosophy.** A critical examination of the theories of leading philosophers on the proper relation of man and society. Particular attention will be given to philosophical assumptions regarding psychology, epistemology, and metaphysics; the place of law in various theories; and analyses of social justice. Readings will be from both classical and contemporary sources.

*Fall semester.* Mr. Oberdiek.

**22. American Philosophy.** This course will focus on pragmatism's contribution to American thought. Peirce, James, and Dewey will be given the most attention, but the implications of pragmatism for major work on social, political, and aesthetic questions may be traced in such thinkers as O. W. Holmes, Jane Addams, G. H. Mead, Randolph Bourne, and Thorstein Veblen. Interaction of pragmatism and positivism will be considered.

*Not offered 1974-75.* Mr. Schuldenfrei.

**23. Contemporary Philosophy.** A study of current attempts to resolve fundamental philosophical issues. Readings include articles and books by major 20th century philosophers, such as G. E. Moore, Bertrand Russell, and Ludwig Wittgenstein.

*Not offered 1974-75.* Mr. Raff.

**24. Epistemology.** This course will consider questions about the nature, source, and value of knowledge. Also, different conceptions of knowledge will be examined for their implications concerning the social role of knowledge.

*Not offered 1974-75.* Mr. Schuldenfrei.

**26. Philosophy of Language.**

*Not offered 1974-75.*

**27. Metaphysics.** Axioms and foundational questions; existence, identity and individuation; essence, attribute and the problem of universals. Implications for (a) causality, necessity and the justification of induction; and (b) the nature of love of an individual "for himself." Intensive study of Aristotle, then major criticisms and alternatives, as well as developments, in the writings especially of Plato, Hume and Strawson, but also of Aquinas, Descartes, Locke, Russell and others, including more recent authors.

*Spring semester.* Mr. Gotthelf.

**28. Marxist Philosophy.** An introduction to the philosophy of Marx and Engels. The course will focus on the development of Marxist dialectical method as based on the writings of Hegel and Feuerbach. Marx's use of his method will then be examined in his main work, the four volumes of *Capital,* leading

to an exposition of the fundamental conception of Marxian economics.
*Fall semester.* Mr. Mills.

**29. Philosophy of Mind.** Concepts of mind will be explored with special attention given to the mind-body problem and the nature of motive, intention, and human action. Readings from both historical and contemporary sources.
*Not offered 1974-75.*

**30. The Philosophy of Education.**
*Not offered 1974-75.*

**37. History of Science.** A survey of the development of physics and astronomy in the sixteenth and seventeenth centuries, emphasizing the nature of the scientific revolution, the revolt against Aristotle, the new role of mathematics within science, the role of experiment, and the gradual development of concepts of mass, force, universal gravitation, and the heliocentric universe. The philosophical and sociological origins of the scientific revolution will also be studied. Readings are drawn mainly from the writings of Copernicus, Kepler, Galileo, Descartes, and Newton.
*Spring semester.* Mr. Lacey.

**38. Philosophy of Science.** The course will focus on issues connected with the nature and verification of scientific theories. Special treatment will be given to the nature of scientific change, growth and development, giving an historical emphasis to the course. The general issues will be illustrated by the concrete analysis of some concrete theme within the sciences, such as the historical development of the concepts of space, time and motion.
*Not offered 1974-75.* Mr. Lacey.

**39. Phenomenology and Existentialism.**
*Spring semester.* Mr. Lachterman.

**85. Colloquium: Legal and Political Philosophy.** A study of concepts of law, including examination of the relationships between legal systems and other social and political institutions. Such issues as the proper relationship between law and morality, civil disobedience, legal enforcement of morality, and justifications of punishment are considered. Readings in both historical and contemporary sources. Two credits.
*Not offered 1974-75.* Mr. Oberdiek.

**86. Colloquium: Philosophy of the Social Sciences.** This colloquium will concentrate on philosophical anthropology. It will consider some different conceptions of man which have been important historically or are of contemporary relevance, such as those of B. F. Skinner, Freud, Dewey, Durkheim, and Marx. The different conceptions will be examined with special emphasis on their implications for social organization and the nature and possibility of human happiness. Two credits.
*Not offered 1974-75.* Mr. Schuldenfrei.

**87. Colloquium: Advanced Logic and Foundations of Mathematics.** A selection of topics from the following: metatheorems of first order logic, the incompleteness of first order axiomatic systems of arithmetic, recursive function theory, modal logics, axiomatic theories of space and time, logical form and the structures of natural languages, philosophical foundations of arithmetic,

foundations of geometry emphasizing problems of the nature of metrics. (May be taken for one or two credits. Approval of instructor required.)
*Spring semester.* Mr. Lacey.

**93. Directed Reading.**
*Each semester.* The staff.

**96. Thesis.**
*Fall semester.* The staff.

**97. Senior Conference.**
*Spring semester.* The staff.

HONORS SEMINARS

**101. Moral Philosophy.** An examination of the principal theories about value and moral obligation, and of their justification; of the concepts of justice and human rights; of the implications for ethics of different theories about the freedom of the will. Works of representative theorists, both classical and contemporary, will be read.
*Spring semester.* Mr. Oberdiek.

**102. Ancient Philosophy.** The development of Greek philosophy from its sixth-century B.C. beginnings to the thought of Plato and Aristotle. Emphasis on achieving a comprehensive and critical understanding of the philosophy of Aristotle, its historical role and objective significance. Attention is given to developing a proper methodology for critical historical study in philosophy, and to the Presocratic, Socratic and Platonic background of Aristotle's thought.
*Fall semester.* Mr. Gotthelf.

**103. Modern Philosophy.** Metaphysical and epistemological problems about the nature of minds and bodies, the varieties of knowledge and freedom, are approached through the philosophical systems of Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, Kant.
*Spring semester.* Mr. Raff.

**104. Contemporary Philosophy.** Some current philosophical problems are investigated in light of the work of Russell, Moore, Wittgenstein, and the most recent contributions.
*Not offered 1974-75.* Mr. Raff.

**106. Aesthetics.**
*Spring semester.* Mr. Mills.

**107. Logic and Foundations of Mathematics.** See Philosophy 87.
*Spring semester.* Mr. Lacey.

**109. Metaphysics.** The nature of existence; identity and individuation, essence, attribute and universal. Their implications for (a) causality, necessity, and the justification of induction; and (b) the nature of love of an individual "for himself". Intensive study of relevant portions of the works of Aristotle, then major criticisms and alternatives, as well as developments, in the writings especially of Plato, Hume and Strawson, but also of Aquinas, Locke, Kant, Frege, Russell and others, including more recent authors. Related issues as they bear on these, and attention given to the general question of proper methodology in metaphysics.
*Spring semester.* Mr. Gotthelf.

**110. Medieval Philosophy.**
*Not offered 1974-75.*

**111. Philosophy of Religion.**
*Not offered 1974-75.*

**112. Philosophy of Mind.** Concepts of mind will be explored with special attention given to the mind-body problem and the nature of human action. Readings from both historical and contemporary sources.
*Not offered 1974-75.*

**113. Epistemology.** The seminar will concern itself primarily with the problem of the sources of knowledge and the problem of justifying belief.
*Not offered 1974-75.* Mr. Schuldenfrei.

**114. Nineteenth Century Philosophy.** An examination of the central issues of German critical philosophy (Kant, Hegel, Feuerbach, Marx).
*Fall semester.*

**115. Language and Thought.** See Linguistics 107.

**116. Philosophy of History.**
*Not offered 1974-75.*

**117. Philosophy of the Social Sciences.** Philosophical problems arising from the application of scientific methods to human behavior (see Philosophy 18).
*Not offered 1974-75.*

**118. Philosophy of Psychology.** The study will center upon behaviorism, its various kinds, its critics, and alternatives to it. Among the topics covered will be the methodological and philosophical foundations of behaviorism, types of theoretical concepts used in psychology, the explanatory function of various theoretical concepts (e.g., mentalistic and neurophysiological), the explanation of linguistic behavior, the compatibility of determinism with psychology, the scientific status of psychoanalytic concepts and explanations, the relation between structural and functional explanations, criteria of choice between conflicting theories.
*Spring semester.* Mr. Lacey.

**119. History and Philosophy of Science.** An examination of some of the central problems in the philosophy of science (e.g., the nature of scientific explanations, the interrelationship between theory and observation, criteria for the acceptance of a scientific theory, the nature of scientific concepts) will be made through an analysis of important episodes in the history of physics. Writings of Aristotle, Copernicus, Kepler, Galileo, Descartes, Newton, Mach, and Einstein will be studied, as well as contemporary writings in the philosophy of science.
*Fall semester.* Mr. Lacey.

**121. Social and Political Philosophy.** A critical examination of the theories of leading philosophers on the proper relation of man and society (see Philosophy 21).
*Fall semester.* Mr. Oberdiek.

**123. Phenomenology and Existentialism.**
*Spring semester.* Mr. Lachterman.

**180. Thesis.** A thesis may be submitted by majors in the department in place of one Honors paper, upon application by the student and at the discretion of the department.

# PHYSICAL EDUCATION FOR MEN

WILLIS J. STETSON, *Professor of Physical Education for Men and Director of Athletics*
GOMER H. DAVIES, *Associate Professor*
LEWIS H. ELVERSON, *Associate Professor*
ERNEST J. PRUDENTE, *Associate Professor*
WILLIAM C. B. CULLEN, *Associate Professor*
DOUGLAS M. WEISS, *Assistant Professor*
BROOKE P. COTTMAN, *Assistant*
MICHAEL P. FITZPATRICK, *Assistant*
HENRY C. FORD, *Assistant*
JOSEPH LEITNER, *Assistant*
C. J. STEFANOWICZ, *Assistant*
EDGAR TOWNSLEY, *Assistant*
JOHN P. UDOVICH, *Assistant*
ANDREW J. ZACHORCHEMNY, *Assistant*

The course in Men's Physical Education is designed to promote an awareness of one's physical well being through a program of regular exercise. In addition, the learning of new sports skills and the improvement of those previously acquired is achieved by planned instruction. Emphasis is placed on the individual, or so-called "carry-over" sports, as well as those involving a team effort.

The intercollegiate athletic program is comprehensive, including varsity schedules in eleven different sports. In many of these activities contests are arranged for junior varsity teams, thus providing ample opportunity for large numbers of men to engage in intercollegiate competition.

## Faculty Requirements

Physical Education is required of all non-veteran freshmen and sophomores unless excused by the College physician. All students must successfully pass a swimming survival test or take up to one quarter (21 hours) of swimming instruction. After the first quarter of the freshman year, a student may be exempted from the required program if he has passed the swimming requirement and practical and written tests in activities chosen from two of the following areas: individual sports, team sports, dance, and swimming. Two quarters of instruction in any activity automatically exempts a student from that activity. Independent study may be possible in an activity after one quarter of instruction in that activity. Students will be given physical education credit for participation in intercollegiate athletics. During participation in the program, men students must participate in their assigned activity a minimum of three hours each week.

All men not excused for medical or other reasons are expected to fulfill this requirement. No student shall be permitted to enter his senior year with a deficiency in Physical Education.

FALL ACTIVITIES

| | | |
|---|---|---|
| Adapted Physical Education | *Cross Country | †Modern Dance |
| †Aquatics | †Folk Dance | **Soccer |
| †Archery | *Football | †Tennis |
| Badminton | †Golf | Touch Football |

WINTER I AND II ACTIVITIES

| | | |
|---|---|---|
| Adapted Physical Education | †Folk Dance | †Tennis |
| †Aquatics | †Modern Dance | †Volleyball |
| †Badminton | Squash | Weight Training |
| **Basketball | *Swimming | *Wrestling |

SPRING ACTIVITIES

| | | |
|---|---|---|
| Adapted Physical Education | *Lacrosse | *Track |
| †Aquatics | †Modern Dance | †Volleyball |
| *Baseball | Softball | |
| **†Golf | **†Tennis | |

*Intercollegiate competition only.
**Intercollegiate competition and course instruction.
†Some co-ed sections.

# PHYSICAL EDUCATION FOR WOMEN

ELEANOR K. HESS, *Professor and Chairman*
IRENE MOLL, *Associate Professor*
PATRICIA WITYK BOYER, *Assistant Professor*
SUSAN DAVIS, *Instructor*
MIKI W. DEBAISE, *Instructor*

The aim of the Department is to contribute to the education of all women students through the medium of physical activity. We believe this contribution can best be achieved through participation in a broad program of sports, dance and developmental activities. The program provides instruction and experience in sports, dance, and swimming on all levels. It is our hope that the student will also acquire an appreciation of dance as an art form; good sportsmanship; added endurance; good posture; leadership training; joy in exercise; and a program of interests and skills that will carry over after college, so she may become a useful member of her community.

An attempt is made to keep classes small in order to insure individual attention, and students are grouped where possible according to ability. Ample opportunities are given for intramural and intercollegiate competition, as well as for public performances and demonstrations.

Freshmen and sophomores take three periods of activity each week. These may be elected from classes listed below with the stipulation that they take swimming for a maximum of one term (at least 21 water hours) if they fail to pass the survival swimming test. In the sophomore year, the department encourages students to develop greater initiative in acquiring habits of regular exercise by planning their own programs of physical activity. This is accomplished by granting greater freedom in the fulfillment of the requirement

through a variety of programs worked out by the student and the department. Since the requirement is a flexible one-quarter to two-year requirement, a student may elect to exempt out after the first quarter of the freshman year if she has passed the swimming test and practical and written tests in activities chosen from two of the following areas: individual sport, team sport, dance, swimming. Two quarters of instruction in any activity automatically exempts a student in that activity. Independent study is possible in an activity after one quarter of instruction in that activity.

Students who have not completed their physical education during their first two years are expected to do so in the junior year because of the faculty regulation which states that "students who have not fulfilled their Physical Education requirement will not be allowed to enter their senior year."

### Fall Activities

Archery*
Dance Composition*
Folk and Square Dance*
Golf*
Hockey
Class and Varsity
Life Saving*
Modern Dance*
Officiating (Hockey)
Swimming*
Tennis
Varsity Volleyball
Water Ballet*

### Winter I and II Activities

Badminton
Class and Varsity
Basketball
Class and Varsity
Bowling
Conditioning Exercises
Cross Country Running
Dance Composition*
Gymnastics
Fencing*
Folk and Square Dances*
Lacrosse (Winter II)
Modern Dance*
Orienteering*
Self-Defense*
Slimnastics
Soccer (Winter I)
Squash
Swimming
Class and Varsity
Advanced Tennis
(By Permission Only)
Volleyball*
Water Safety Instructor's Course*: (Winter II)

### Spring Activities

Archery*
Class and Varsity
Dance Composition*
Folk and Square Dance*
Golf*:
Gymnastics
Lacrosse
Class and Varsity
Life Saving*
Modern Dance*
Officiating (Lacrosse)
Softball
Class and Varsity
Swimming*
Tennis
(Class and Varsity)
Track and Field
W.S.I.* (continued)

*Classes are Co-ed.

# PHYSICS

OLEXA-MYRON BILANIUK, *Professor*

MARK A. HEALD, *Professor and Chairman*‡

PAUL C. MANGELSDORF, JR., *Professor and Acting Chairman*

JOHN R. BOCCIO, *Associate Professor*‡

ALBURT M. ROSENBERG, *Associate Professor*

ARTHUR L. BOWLING, JR., *Assistant Professor*

DUNCAN E. McBRIDE, *Assistant Professor*

MICHAEL D. ROSENTHAL, *Assistant Professor*

THOMAS O. WRIGHT, *Visiting Lecturer*

The Physics Department offers two introductory courses, either of which may be taken in preparation for further work in the Department. Physics 1, 2 is the more applied course, aimed toward life-science majors and pre-meds. Physics 3, 4 is the more analytical course, aimed toward majors in physics, chemistry, mathematics, and engineering. The introductory courses can be supplemented by directed-reading or project attachments. Entering freshmen who may be qualified for advanced placement should see the Department chairman. In addition, the Department offers a selection of terminal courses intended principally for non-science majors in fulfillment of the science distribution requirement.

In Physics 3, 4, and in the advanced work of the Department, emphasis is placed on quantitative, analytical reasoning, as distinct from the mere acquisition of facts and skills. In all courses and seminars particular importance is attached to laboratory work, since physics is primarily an experimental science. Honors candidates taking physics seminars accompanied by experimental work must submit their laboratory notebooks to the visiting examiners for their inspection.

In addition to curricular work, students are encouraged to pursue research projects in consultation with members of the faculty. Good shop facilities, a wide range of electronic instrumentation, and the Computer Center are available in support of independent work. Research colloquia are held both by the Department and by the Bartol Research Foundation, which is located on the Swarthmore campus and which offers a Ph.D. program in physics through an affiliation with Thomas Jefferson University (see p. 13). In special cases Swarthmore students may take graduate courses at Bartol or at the University of Pennsylvania.

## Requirements and Recommendations

Students who intend to major in physics normally take Physics 3, 4 and Chemistry 1, 2 or 11, 12 in the freshman year and Physics 11, 12 in the sophomore year. In addition they should complete Mathematics 22 and 30 by the end of their sophomore year. Students taking Physics 1, 2 may also continue with Physics 11, 12 and advanced work in the Department, although in some cases it may be appropriate to include a half-credit attachment to Physics 11 to expand the student's background in certain topics treated intensively in

‡Absent on leave, 1974-75.

Physics 3, 4. In view of graduate school requirements and of the extensive literature of physics in French, German and Russian, it is strongly recommended that the student acquire a reading knowledge of one of these languages. Satisfactory work in Physics 1, 2; 3, 4; or equivalent, is prerequisite for all further work in the Department, and Chemistry 2 or 12 is a prerequisite for Physics 113.

Honors students majoring in physics normally take Physics 106, 108, 113, and Mathematics 51, 52, or 101. Physics 114 and one or two other mathematics seminars are encouraged but not required. Other seminars and courses in the program may be chosen to meet the interests of the student. Students preparing for graduate work in physics usually present four papers in physics and two in mathematics; one or two papers in chemistry, astronomy, engineering, economics, or another minor may be substituted. An Honors major with three papers in physics and greater diversity in the minors and supporting courses constitutes an effective educational program for careers in law, medicine, and other professions inasmuch as the aim throughout is to achieve an understanding of fundamental ideas and concepts, as distinct from the mastery of information, skills, and techniques in a limited segment of science. Honors students minoring in physics may prepare for examinations by taking Physics 11, 12, as well as by one or more seminars.

A Course major in physics is also available. This program is more flexible and requires less intensive concentration in physics and mathematics than an Honors program. The upperclass program of study is worked out in consultation with the Department chairman and may include special courses, tutorials, research projects, and participation in seminars for Course credit. In addition, the program normally includes related work in astronomy, chemistry, and/or engineering.

**1, 2. Introductory Physics.** An introduction to selected concepts and techniques of classical and modern physics, with applications and examples chosen principally from biology and medicine. Topics covered in the first semester include vectors, Newtonian mechanics, mechanical advantage, surface tension, fluid mechanics, and thermodynamics; and in the second semester, electricity and magnetism and modern physics. Three lectures and a conference session weekly; an intensive laboratory period in alternate weeks. Completion of Mathematics 3, 4 (or concurrent enrollment in Math 5, 11) is desirable. Not open to freshmen except by special permission.
Mr. Rosenberg and Mr. Bilaniuk.

**3, 4. General Physics.** A presentation of a unified view of physics through analysis of basic principles, their implications and their limitations. Special emphasis will be placed on analytical understanding of physical phenomena through the use of calculus and simple differential equations. Topics covered in the first semester include mechanics in Cartesian coordinate systems including accretion problems, conservation laws, damped forced simple harmonic motion, systems of particles, elementary planetary orbits, collisions, rigid body rotation about a fixed axis, special relativity, thermodynamics, kinetic theory, statistical mechanics, and one-dimensional wave equations. Topics covered in the second semester include electricity and magnetism, Maxwell's equations in integral form, direct-current circuits, complex impedance and alternating-current circuits, diffraction, Bohr's model of the atom and elementary wave mechanics. Laboratory and homework exercises include use of the computer. Three lectures and a laboratory period weekly.

Prerequisite: Mathematics 5, 11 taken concurrently, or comparable preparation in mathematics.
Mr. Rosenthal and Mr. McBride.

**6. Principles of Geology and the Earth Sciences.** An analysis of the forces shaping our physical environment, drawing on the fields of geology, geophysics, meteorology and oceanography. Recent developments in these fields are emphasized with readings and discussion based on current literature. The underlying physical and chemical principles are stressed. Laboratory demonstrations and one or more field trips. No special scientific background required.

*Fall semester.* Mr. Wright.

**7, 8. Concepts and Theories in Physical Science.** The first semester consists of an analysis of celestial and terrestrial motion leading to the Newtonian synthesis, the conservation laws of physics, the nature of scientific laws, and the kinetic-molecular theory of gases. The second semester considers the evolution of modern physics: certain electromagnetic phenomena, the discovery of the electron, wave behavior of light, aspects of Einsteinian relativity, the wave versus the quantum theory of light, Bohr's model of the atom, wave nature of matter, radioactivity, elementary particles, nuclear energy, and the development of the atomic bomb.

This course is designed as a terminal course in physical science to meet the needs of non-science majors and fulfills the group 1 distribution requirement. It is not intended to fulfill the physics requirement of medical schools, and cannot be used as a prerequisite for further work in the Division of the Natural Sciences. Three lectures and one three-hour laboratory per week.

*Not offered in 1974-75.* Mr. Rosenberg.

**7A. Revolutions in Physics.** The problem of celestial motion and the Copernican revolution. The problem of terrestrial motion and Galileo. The Newtonian synthesis. Einstein's theory of relativity. Consideration of the nature of scientific revolutions. Includes weekly laboratory.

*Spring semester.* Mr. Rosenberg.

**9A. Order and Symmetry in Natural Systems.** Analysis of the forms seen in nature and the principles involved in order and symmetry. A study of pattern as it arises from (1) statistical regularities governed by the laws of chance, time's arrow, (2) fluid appearances of streams and gas flows, and (3) geometrical packing or mathematical ordering, with examples selected from molecular systems, crystals, atoms, nuclei, and elementary particles. Symmetries in living organisms and in man-made designs will also be considered. The IBM 1130 computer and graphic display will be used in producing various patterns. Three lectures plus laboratory weekly. Intended for non-science majors.

*Spring semester.* Mr. Rosenberg.

**9B. Analysis of the Perturbed Environment.** Problems associated with numbers and flow in the movement of people. Energy resources and distribution. Selected problems of pollution, including radioactive contamination. The computer will be used to simulate different ecological situations. The value and implication of these models will be sought. Where needed basic physical concepts, computer techniques, and analytical methods will be taught. Lectures plus projects. Intended for non-science majors.

*Not offered in 1974-75.* Mr. Rosenberg.

**10. Topics in Biophysics.** Applications of physical tools and analysis to living systems. Mechanisms of damage by ionizing radiation. Emphasis is at the cellular and subcellular levels of integration. The course is intended for physical science, mathematics, and engineering students. Previous biological training is

not required. Three lectures per week. In lieu of laboratory work, visits will be made to nearby biophysical laboratories.

*Not offered in 1974-75.* Mr. Rosenberg.

**11, 12. Mechanics, Fields, and Waves.** Particle and rigid body mechanics with an introduction to advanced dynamics. Elastic waves and wave motion. Maxwell's equations and electromagnetic waves. Schroedinger equation and introductory quantum mechanics. Considerable emphasis is placed on laboratory work, both to illuminate and extend the subject matter, and to foster the students' ability to work independently. Three lectures and a laboratory period weekly. This course may be taken by Honors students with a minor in physics in preparation for an Honors examination.

Prerequisite: Physics 1, 2 or 3, 4, Mathematics 11; Mathematics 22 taken concurrently.

Mr. Bowling and Mr. Mangelsdorf.

**21. Principles of Aeronautics.** Principles of flight, elements of aircraft structure and performance, flight instruments, navigation aids and methods, flight meteorology. No prerequisites, open to all students. Two lecture hours and an afternoon ground lab weekly.

*Fall semester, 1974.* Mr. Bilaniuk.

**52. Quantum Physics.** Quantum mechanics and solid-state physics. Three lectures and one laboratory period weekly.

**62. Introduction to Oceanography.** The theory and practice of modern marine sciences. Topics to be covered include physical oceanography and measurement techniques, the dynamics of rotating stratified fluids, air-sea interaction, coastal and estuarine processes, the ocean as a biological habitat, and the energy, mass, and chemical budgets of the oceans. This course is intended to enable the student to follow current literature in marine sciences. Exercises on the computer and a field trip.

Prerequisite: Mathematics 52 or consent of the instructor.

Mr. Mangelsdorf.

**63. Procedures in Experimental Physics.** Techniques, materials, and the design of experimental apparatus. Shop practice, electronic circuit construction, vacuum systems. Normally offered as a half-credit attachment to Physics 108; may be elected by other students with permission of the instructor.

*Spring semester.* Mr. Rosenthal.

**64. General Relativity.** Tensor algebra, differential geometry, tensor analysis, field equations in empty space, Schwarzchild solution, field equations in non-empty spaces, Robertson-Walker metric, cosmological models, black holes, gravitational waves.

Prerequisite: Consent of instructor.

*Fall semester, 1975.* Mr. Boccio.

**93. Directed Reading.** This course is to provide an opportunity for individual students to do special work in fields not covered by the undergraduate courses listed above. Weekly topics and problems will be assigned, and the student will present oral and written reports to the instructor.

**94. Research Project.** Laboratory work directed toward the acquisition of knowledge and skills that will be useful in future research. The project ordinarily involves development of apparatus and the performance of an experiment of

contemporary significance in physics. An oral and written report will be presented to the instructor.

HONORS SEMINARS

**106. Atomic and Nuclear Physics.** Special theory of relativity. Wave-particle duality. Introduction to wave mechanics, the hydrogen atom, structure and spectra of many-electron atoms. Elements of solid state physics. Properties and systematics of nuclei, nuclear reactions, nuclear forces and models. Introduction to fundamental particles, their symmetries, and interactions. The accompanying laboratory includes basic experiments in atomic and nuclear physics.

Prerequisite: Physics 11, 12; Mathematics 22, 30.

*Fall semester.* Mr. Bilaniuk and Mr. Mangelsdorf.

**108. Electrodynamics.** Applications of Maxwell's equations. Boundary value problems. Waveguides, antennas, radiation. Fraunhofer and Fresnel diffraction theory. Four-vector formulations of the special theory of relativity. Microscopic theory of the electrical and magnetic properties of materials. Plasma physics. Accompanied by laboratory exercises and experimental projects.

Prerequisites: Physics 11, 12; Mathematics 22, 30.

*Spring semester.* Mr. Bowling and Mr. Rosenthal.

**113. Thermal and Solid State Physics.** Thermodynamics and statistical mechanics. Thermal radiation and quantum statistics with applications. Band theory of solids. Specific heat. Conduction in metals and semiconductors. Accompanied by experimental projects.

Prerequisites: Chemistry 2 or 12, Physics 106.

*Fall semester.* Mr. McBride.

**114. Quantum Mechanics.** Quantum amplitude mechanics. Quantum interference effects. Schroedinger wave mechanics. Creation and annihilation operators. Heisenberg matrix mechanics. Orbital angular momentum and central potentials. Superconductivity. Potential scattering, Green's functions and Regge Poles. Perturbation theory. Variational methods. Spin, coupled angular momentum, and isospin. Identical particles. Calculation of atomic-energy levels including spin-orbit effects and external fields. Interaction of radiation with matter. Second quantization.

Prerequisite: Physics 106.

*Spring semester.* Mr. Bowling.

# POLITICAL SCIENCE

CHARLES E. GILBERT, *Professor*
J. ROLAND PENNOCK, *Professor and Acting Chairman*
DAVID G. SMITH, *Professor and Chairman*‡
RAYMOND F. HOPKINS, *Associate Professor*‡
ABDUL AZIZ JALLOH, *Associate Professor*
JAMES R. KURTH, *Associate Professor*
JANE L. GILBERT, *Assistant Professor*
KENNETH G. LIEBERTHAL, *Assistant Professor*
KENNETH E. SHARPE, *Assistant Professor*

Courses and seminars offered by the Political Science Department deal with the place of politics in society and contribute to an understanding of the purposes, organization, and operation of political institutions, domestic and international. For the beginning student, the Department offers courses dealing generally with the basic concepts of political science and the processes of politics as illustrated by case studies, by theoretical analysis, and by more extended study of the elements of politics in various institutional settings. In appropriate places throughout the curriculum, attention is focused on problems of change (evolutionary and revolutionary), freedom and authority, war and peace—and on the development of political institutions that are responsive to the needs of our day. Courses are provided that give special attention to political theory, comparative political systems, political development, politics and government in the United States, and international relations.

## Requirements and Recommendations

Students planning to study political science are advised to start with Elements of Politics (Political Science 1), and to continue with one or more of the other introductory level courses, Policy-Making in America (Political Science 2), Comparative Politics (Political Science 3), International Politics (Political Science 4), Politics of the Third World (Political Science 5). Normally any two of these courses, preferably including Political Science 1 and/or Political Science 2, constitute the prerequisite for further work in the Department. Students who intend to major in political science should begin their work in the freshman year if possible. Supporting courses strongly recommended for all majors are: Methods of Social Research (Political Science 25) or Applied Statistics I (Mathematics 1); and Introduction to Economics (Economics 1-2). Political Theory, either in seminar for Honors students, or in course (Political Science 54) for Course students, is required of all majors.

## Program in International Relations

Students who plan to enter upon a career in the field of international relations should include in their programs, during the first two years, introductory courses in economics, history, and political science and should complete the intermediate course in one or more modern languages.

Advanced courses selected from the groups listed below may be incorporated in the programs of students who do their major work in economics, history, political science, or a modern language.

‡Absent on leave, 1974-75.

## POLITICAL SCIENCE

Those students who wish to concentrate in international relations may take their Senior Comprehensive Examination in this field. Students preparing for this examination should take eight or more courses from among those listed below, including all of those listed in Group I, one or more in Group II, and one or more in Group III. A thesis or other form of independent work is strongly recommended. The examination is administered by a committee appointed by the chairmen of the Departments of Economics, History, and Political Science, under the chairmanship of the Department of Political Science.

**Group I**

Political Science 4—International Politics
Political Science 13—International Organizations in World Politics
Political Science 14—American Foreign Policy
Economics 30—The International Economy

**Group II**

History 4—Latin America
History 8—Africa
History 25—Modern Russia
History 35—America and the World: to 1900
History 36—America and the World: since 1900
History 43—The Expansion of Europe
History 44—Modern China
History 45—Modern Japan
History 46—Asian Nationalisms

**Group III**

Economics 11—Economic Development
Economics 31—Comparative Economic Systems
Political Science 3—Comparative Politics
Political Science 5—Politics of the Third World
Political Science 18—Political Development
Political Science 19—Comparative Communist Politics
Political Science 20—Politics of China
Political Science 21—Politics of Africa
Political Science 22—Latin American Politics
Political Science 55—Modern Political Theory
Political Science 64—Topics in International Relations
Political Science 70 (Also listed as Economics 70)—The Political Economy of Communist Systems

Students who plan to enter the Honors program will find it possible to select a similar combination of courses and seminars in the field of international relations. In planning such programs, they should consult with the chairman of their prospective major department.

**1. Elements of Politics.** Designed to probe some major questions of politics, this course asks: Who governs in the interests of whom? How? What are the sources of political stability and change? How is political power created, maintained, or challenged? Answering these questions will involve a study of the basic institutions, concepts, and moving forces of politics and exploring problems such as justice, freedom, equality, and obligation. Materials will be drawn from the United States, Germany, China, and the Soviet Union.

*Fall semester.* Staff.

**2. Policy-Making in America.** Consideration of basic elements of American national politics, and of ways of defining and explaining the functions and results of American politics. Major attention will be devoted to electoral organizations, voting behavior and opinion formation, legislation and presidential leadership, administration and policy choices.

*Each semester.* Staff.

**3. Comparative Politics.** An introduction to theories of comparative politics and to the data used in comparing political systems. Major attention will be given to the political systems of Western Europe, particularly Britain, France, West Germany, Italy, and Spain. The course will focus on political culture; political crises; political parties, including Communist, anarchist and fascist movements; and contemporary political institutions and policy-making.

*Spring semester.* Staff.

**4. International Politics.** An introduction to the analysis of the contemporary international system and its evolution since 1945. The course will consider the foreign policies of major powers and their interaction, contemporary economic conflicts affecting international relations, and the role of ideologies. Various approaches to world order, such as diplomacy, collective security, disarmament and world government will be considered.

*Spring semester.* Staff.

**5. Politics of the Third World.** A study of politics in post-revolutionary or post-independence periods in selected countries in Asia, Africa, and Latin America. Topics include nationalism, revolutionary movements, party and interest group formation, military rule, political mobilization, and ideologies.

*Spring semester. Not offered in 1974-75.*

**11. Problems in Community Government.** The social, economic, and legal setting of local government. Politics and administration at state and local levels. Problems of federalism and metropolitan areas. The course emphasizes special research projects, such as field work in nearby communities.

*Spring semester.*

**13. International Organizations in World Politics.** World politics is rapidly changing as a result of the increased importance of transnational relations—relations arising, for instance, from economic and environmental issues rather than from military concerns of states. The course surveys briefly the activities of international organizations related to military security and peacekeeping, but will focus primarily on the new issues facing international organizations, assessment of responses to these issues so far, and forecasting of likely institutional arrangements in the future.

*Prerequisite:* Political Science 4 or the equivalent. An understanding of international economics is also useful.

*Alternate years, spring semester.* Mr. Kurth.

**14. American Foreign Policy.** An examination of the making of American foreign policy and of the major problems faced by the United States in the modern world. The course will focus on the influence of political, bureaucratic, and economic forces and on the problems of war, intervention, and economic conflict.

*Alternate years, fall semester. Not offered in 1974-75.* Mr. Kurth.

**18. Political Development.** An examination of the conditions of change and development. The processes which promote change and affect the stability

and capacity of political systems will be considered in the context of widely diverse states including industrialized and third world states.

*Spring semester.* Mr. Jalloh.

**19. Comparative Communist Politics.** A comparative study of the various communist countries, with special attention to the Soviet Union and the Chinese People's Republic. Analysis of differences in goal structures, modes of rule, and social development as a function of the interaction between legacies of the paths to power, domestic political conflict, and economic imperatives.

*Spring semester.* Mr. Lieberthal.

**20. Politics of China.** An analysis of critical elements in Chinese politics: the historical legacy, ideology, policy-making, policy implementation, socio-political reintegration of the polity, and economic development.

*Fall semester.* Mr. Lieberthal.

**21. Politics of Africa.** A survey of political forces in contemporary Africa. Selected countries will be studied to illuminate important aspects of political change including traditional attitudes, leadership, ethnic rivalry, socialism, neo-colonialism, military intervention and national integration.

*Spring semester.* Mr. Jalloh.

**22. Latin American Politics.** This introduction to Latin American politics will explore such topics as the colonial legacy of Latin America; the difficulties of creating viable political institutions; contemporary sources of instability, revolution, and military intervention; the different meaning of politics for various groups (Indians, peasants, workers, middle-class groups, industrialists, landowners, etc.); and the economic and political difficulties raised by U.S.-Latin American relations. These topics will be approached through a comparative study of such countries as Brazil, Chile, Cuba, Mexico, and Argentina.

*Fall semester.* Mr. Sharpe.

**25. Methods of Social Research.** *Half-course.* Also listed as Sociology-Anthropology 25. An introduction to empirical social science. Topics for study include: the basis of inquiry, the design of social research, problems of sampling measurement, statistical analysis, survey research and observation. The following half-course modules may also be added: (Some will be offered each year).

25b. Survey design and analysis
25c. Interviewing of children
25d. Case studies
25e. Experimental design and analysis
25f. Participant observation
25g. Clinical observation
25h. Cross-national research
25i. Simulation

*Spring semester.*

**36. The Politics of Peasant Movements.** Focusing on the politics of peasant movements, this course will address such general political questions as: How is authority legitimized? How do men come to accept or reject the obligation to obey? What are the obstacles and resources involved in creating the power to challenge a particular form of control? The course will integrate theories of revolution and ideological change with anthropological materials to explore the quality of peasant life, the meaning of various forms of economic and political control, and the origins and results of peasant movements. Cases will

be drawn from Mexico, China, Italy, the Dominican Republic, and the United States.

*Spring semester. Not offered in 1974-75.* Mr. Sharpe.

**48. Topics on Modern China.** (Also listed as History 48.) This course will focus on social and economic changes and their political repercussions in China from the Ch'ing dynasty to the present. Readings will include the contemporary observations of Chinese and foreigners. Prerequisite: *Either* History 9, History 44, or Political Science 20, *or* permission of the instructors.

*Spring semester. Not offered 1975-76.* Miss Li and Mr. Lieberthal.

**51. Public Administration.** An analysis of policy-making and administration in modern governments with illustrative material drawn chiefly from the national government of the United States and with particular reference to recent developments. Problems of administrative organization, conduct of regulatory and managerial activities, financial administration, personnel, public relations, administrative law, politics and administration.

*Fall semester, alternate years. Not offered in 1974-75.*

**52. American Constitutional Law.** The role of the Supreme Court in the American political system, viewed both historically and through analysis of leading cases. Areas of constitutional law and development emphasized are: the nature and exercise of judicial review; federalism and the scope of national power; due process, equal protection, the First Amendment, and other civil liberties.

Open to sophomores and upperclassmen.

*Fall semester.* Mr. Pennock.

**53. American Party Politics.** An historical and functional analysis of American political parties. The study of interest groups, public opinion and voting behavior, electoral systems and representation, the legislative process.

*Alternate years, fall semester.* Mrs. Gilbert.

**54. Political Theory: Plato to Hobbes.** The development of political thought based on the work of the chief political philosophers from Plato to Hobbes. The course will consider classical, medieval, and early modern theories concerning: the sources of authority and obedience; the origins and functioning of the polity; the role of law in government; the relationship between the state and the individual; and the character of the good state.

Open to sophomores planning to take the "Modern and Analytical" version of the Political Theory honors seminar; otherwise to juniors and seniors only, except by special arrangement.

*Fall semester.* Mr. Sharpe.

**55. Modern Political Theory.** A study of the development of liberalism, socialism, and democratic theory. Emphasis will be placed on reading the original texts of such theorists as Hobbes, Locke, Rousseau, Burke, Mill, Tocqueville, Marx and Lenin and several contemporary democratic theorists.

*Spring semester.* Mr. Sharpe.

**56. Jurisprudence.** A study of the sources and nature of law; historical, sociological, philosophic, "realistic," and behavioral approaches to jurisprudence; the nature of the judicial process and other problems of juris-

prudence, illustrated by judicial decisions and other legal materials relating to selected areas of law.

*Spring semester.* Mr. Pennock.

**57. Problems of Democratic Theory.** Individualistic, pluralistic, and "holistic" approaches will be studied, including contemporary attacks upon liberalism and pluralism. Democracy will be considered from the point of view of justificatory theory, theories of requisites, and both normative and descriptive operative theory. Theories of "participatory democracy" will be studied.

*Fall semester. Not offered in 1974-75.* Mr. Pennock.

**58. Health Policy.** (Also listed as Economics 58.) Analysis of governmental policy toward health care and public health, its impact upon institutions and resource allocation, and major alternatives for action. Central topics are the organizations of health care delivery (roles and views of physicians, nurses, administrators, patients and insurers); the interplay of federal, state, and local governments, quasi-public authorities, and interest groups; technical and political aspects of health insurance alternatives; health manpower (medical and nursing schools, para-professionals); biomedical research programs. Students wishing to take this course should consult in advance with the instructors. Prior work in at least two of the following will be helpful: Economics 1-2, 4, 26; Political Science 2, 51; Mathematics 1; Engineering 7, 8, 31, 32.

*Spring semester. Not offered in 1974-75.* Mr. Hollister and Mr. Smith.

**60. Special Topics in Political Science.** This course, conducted in seminar fashion, is designed for senior majors. By means of papers and assigned readings it covers aspects of political science not elsewhere intensively developed and helps the students to integrate materials studied previously.

*Spring semester.* Staff.

**61. Topics in Political Theory.** An analysis of topics or problems in the fields of political philosophy or the history of political thought, chosen by the instructor. Some of the possibilities are: varieties of systematic theory; such problems as privacy or individual rights; political obligation; or concentrated study of a particular period such as political thought of eighteenth-century France.

Staff.

**63. Advanced International Politics.** An examination of the major international wars and the major international economic crises from 1870 to the present. The emphasis will be on the relationships between domestic politics and foreign policies. Topics will include World War I, the Great Depression, World War II, and contemporary economic conflicts.

Prerequisite: Political Science 4 of the equivalent.

*Alternate years, spring semester.* Mr. Kurth.

**65. Political Psychology.** (Also listed as Psychology 65.) A psychological examination of individuals' participation in and impact upon politics and the effect of various political systems on individuals. Topics include opinion in the American electoral process, ideology formation and models of post-revolutionary man. Projects will involve gathering original data and analyzing archival data.

*Fall semester. Not offered in 1974-75.*

**70. The Political Economy of Communist Systems.** (Also listed as Economics 70.) A single credit colloquium analyzing the interaction between economics

and politics in Communist countries. Case study material will be drawn from several East European countries, the USSR, and China.

Prerequisite: at least one introductory course in either economics or politics.

*Fall semester.* Mr. Lieberthal and Mr. Pryor.

**93. Directed Readings in Political Science.** Available on an individual or group basis, subject to the approval of the chairman and the instructor.

**96. Thesis.** With the permission of the chairman and a supervising instructor, any major in Course may substitute a thesis for one course, normally during either semester of the senior year. Course students may also elect to write a thesis instead of taking the Senior Comprehensive Examination.

### Honors Seminars

The following seminars prepare for examination for a degree with Honors:

**101. (a) and (b) Political Theory.** The nature of the state, the bases of political obligation, liberty, equality, rights, democracy, totalitarianism—all in the light of the theories set forth by writers on these subjects from Plato to the present. This seminar is given in two versions, one (101a) beginning with Plato and proceeding chronologically, and the other (101b, designated "Modern and Analytical") starting with Hobbes, organized in more topical fashion and giving considerable attention to modern democratic theory. This seminar aims to relate various branches of the discipline of political science to each other and to companion disciplines in the social sciences.

*Each semester.* Mr. Pennock.

**102. Politics and Legislation.** The study of political parties, interest groups, public opinion and voting behavior, electoral systems and representation, the legislative process. Emphasis is on American politics, with some comparative material; and, ultimately, on politics from the standpoint of theories of political democracy.

*Spring semester.* Mr. Gilbert.

**103. Problems in Government and Administration.** Problems of administrative organization, policy-making and responsibility, with primary reference to the United States and to selected fields of policy.

*Fall semester.* Mr. Gilbert.

**104. International Politics.** An inquiry into problems in the international political system. This seminar will consider theories of international stability and disorder, the relationship between foreign policies and the international system and methods of coping with international problems such as diplomacy, war, and international organization. Basic questions considered are how international actors pursue their goals and what consequences result, particularly for war and peace.

Prerequisite: Political Science 4 or the equivalent.

*Fall semester.* Mr. Jalloh.

**105. American Foreign Policy.** A study of key problems faced by the United States in the modern world together with a critical investigation of the making and implementing of American foreign policy. A veriety of explanations of American foreign policy will be discussed and evaluated, and the political, economic, and social influences upon it will be considered. Key assumptions of United States policy-makers will be subjected to scrutiny, and alternate assumptions and policies will be analyzed.

*Spring semester.* Mr. Kurth.

**106. Public Law and Jurisprudence.** A study of the sources and nature of law; historical, sociological, philosophic, "realistic," and behavioral approaches to jurisprudence; the nature of the judicial process and other problems of jurisprudence, illustrated by judicial decisions and other legal materials relating to selected areas of law.

*Spring semester.* Mr. Pennock.

**107. Comparative Communist Politics.** A comparative study of the various communist countries, with special attention to the Soviet Union and the Chinese People's Republic. Analysis of differences in goal structures, modes of rule, and social development as a function of the interaction between legacies of the paths to power, domestic political conflict, and economic imperatives.

*Fall semester.* Mr. Lieberthal.

**108. Comparative Politics.** A comparative study of the political systems of Western Europe. The major countries examined will be Britain, France, Germany, Italy and Spain, but attention will also be given to smaller states. Topics will include (1) competing theories of comparative politics, (2) the relationships between economic development, economic crises, and political conflict, (3) political parties, including communist, anarchist, and fascist movements, and (4) contemporary political institutions and policymaking.

*Fall semester.* Mr. Kurth.

**108B. Comparative Politics: Latin America.** A comparative study of the politics of several Latin American countries: Chile, Brazil, Cuba, Mexico, Peru, Argentina, the Dominican Republic. The course will focus on important differences in major institutions, class structures and social values, and an examination of various theories explaining political stability and change. Problems will include: difficulties of creating stable democratic institutions; causes and results of revolutions, coups, and military interventions; different meanings of politics for various classes in socialist, corporatist, and (formerly) democratic regimes; and the utility of dependency theory in explaining U.S.-Latin American relations.

*Spring semester.* Mr. Sharpe.

**109. Political Development.** A comparative study of the politics of societies undergoing change and modernization. Various theories, approaches, and methods of explanation are examined and considered in the context of third world states in Asia, Africa, the Middle East and Latin America and industrialized states such as the United States and countries of Western Europe.

*Spring semester.* Mr. Jalloh.

**110. Urban Sociology and Politics.** Also listed as Sociology-Anthropology 110. The impact of urbanization on contemporary politics and social structure, from the perspectives of political science and sociology. Emphasis will be placed on empirical study of selected problems such as physical planning, social welfare, and political organization.

*Fall semester. Not offered 1974-75.*

**180. Thesis.**

All members of the Department.

# PSYCHOLOGY

KENNETH J. GERGEN, *Professor and Chairman*
DEAN PEABODY, *Professor*
ALLEN SCHNEIDER, *Professor*
HANS WALLACH, *Professor**
ALFRED BLOOM, *Assistant Professor*§
JEANNE MARECEK, *Assistant Professor*
BARRY SCHWARTZ, *Assistant Professor*†
JEFFREY TRAVERS, *Assistant Professor*
EUGENIE W. FLAHERTY, *Research Associate*
KAYLA BERNHEIM, *Visiting Lecturer*

The work of the Department of Psychology deals with the scientific study of human behavior and experience; the basic processes of perception, learning, thinking and motivation, and consideration of their relation to development of the individual personality; and the social relations of the individual to other persons and to groups. For those students planning graduate and professional work in psychology and related fields, the courses and seminars of the department are designed to provide a sound basis of understanding of psychological principles and a grasp of research method. Students learn the nature of psychological inquiry and the psychological approach to various problems encountered in the humanities, the social sciences and the life sciences.

A special major is available in conjunction with Linguistics emphasizing fundamental issues in human cognitive organization. A full description of this program may be found under "Linguistics."

## Requirements and Recommendations

Psychology 3, Introduction to Psychology (formerly Psychology 1 and 2) is normally considered a prerequisite for further work in the Department. However, Psychology 1 or 2 taken as an introductory course in 1973-74 or Psychology 12, 16 or 18 taken in 1972-73 may be substituted for Psychology 3.

Majors should include advanced work in both of the following areas: (1) basic processes underlying human and animal behavior, such as perception, learning and physiological psychology; (2) human behavior in its social context, such as personality, child psychology, and social psychology. Majors in Course should take at least two courses and majors in Honors, at least one course providing them with experience in basic research (e.g., Psychology 25 or 94). In addition, all majors in Course are encouraged to enroll in Psychology 97 during the spring semester of their senior year. This course is especially suited for preparation for the comprehensive examination. Students intending to pursue graduate work in psychology will also find it useful to take Psychology 13, Statistics for Psychologists.

**3. Introduction to Psychology.** An introduction to the basic processes underlying human and animal behavior, which will be studied in experimental, social, and clinical contexts. Analysis will center on the extent to which normal

†Absent on leave, spring semester, 1974-75.
*Absent on leave, fall semester, 1974-75.
§Joint appointment with Linguistics.

and abnormal behavior are determined by learning, motivation, neural, cognitive, and social processes.

*Fall semester.* Staff.

**13. Statistics for Psychologists.** (See Mathematics 1.)

*Fall semester.*

**24. Psychological Anthropology.** (See Sociology/Anthropolgy 24).

**25. Methods of Psychological Research.** Discussion will focus on the relationships between given theories and the methods used in the supporting research. The comparative advantages and disadvantages of participatory observation and analysis, "objective" naturalistic observation, interviewing, content analysis, and experimentation will be examined. Particular attention will be given to problems in sampling, measurement and scaling, reliability and validity, and controls against artifacts and alternative explanations. Direct research experience will be emphasized.

*Spring semester, 1975.* Mr. Gergen.

**34. Cognitive Patterns in Moral and Political Behavior.** An investigation into the role played by cognitive dimensions in influencing moral and political behavior, with emphasis on adolescence and beyond. An attempt will be made to place the investigation within a framework provided by recent trends in cognitive and linguistic psychology and to draw on the implications of these dimensions with respect to the relationship of the individual to the nation-state and the international system.

*Fall semester.* Mr. Bloom.

**35. Social Psychology.** An examination of theory and research relevant to the understanding of social interaction from a psychological viewpoint. Special emphasis will be placed on social perception and its distortion, attitude development and change, conformity, the relationship of personality to social interaction and social motivation.

*Spring semester.* Mr. Gergen and Mr. Peabody.

**36. Personality.** An examination of contrasting theories of the human personality. Theories of Freud, Jung, Fromm, Rogers and others will be discussed, and special attention will be given to current empirical work.

*Spring semester.* Ms. Maracek.

**37. Learning and Behavior Theory.** The experimental analysis of the major phenomena of learning and conditioning is studied mainly at the animal level. Specific empirical and theoretical issues are considered in detail, and the major theories are evaluated. The laboratory is designed to acquaint students with the major processes considered.

**38. Abnormal Psychology.** Several views of abnormality are considered, including those that allow conceptions of normality. Biological and learned bases of positive and negative abnormality are considered, along with various methods of behavior modification and psychotherapy.

*Fall semester.* Ms. Bernheim.

**39. Child Psychology.** A selective survey of research and theory in child development, emphasizing the period from birth through approximately age 10. The interplay among biological maturation, experience with the physical and social environment, and the socialization practices of parents and schools is examined. Topics covered include sensory-motor and social development in infancy, language acquisition, cognitive change in the preschool and early ele-

mentary school years, moral development, and selected aspects of personality development.

*Fall semester.* Mr. Travers.

**42. Physiological Psychology.** A survey of the neural and biochemical bases of behavior with special emphasis on sensory processing, motivation, emotion, learning and memory. Both experimental analyses and clinical implications will be considered.

*Spring semester.* Mr. Schneider.

**43. The Psychology of Communication.** Topics such as non-verbal behavior and self-disclosure, language acquisition and the Whorf hypothesis, propaganda and rumor are approached from the perspectives of psychological and linguistic theory. Attempts to integrate studies of mass and interpersonal communication.

**44. Psychology of Women.** An examination of biological, psychological, and sociological sex differences. Such issues as genetic and hormonal sex differences, cultural attitudes toward women and sex roles in the social structure will be discussed.

*Spring semester.* Ms. Marecek.

**45. Group Dynamics.** The course will deal with the psychological aspects of behavior in groups. Issues such as intimacy, solidarity, group problem solving, leadership development, splinter-group formation, and phases of group development will all receive attention. Classroom sessions will focus on the ongoing behavior within the group itself. Outside reading and papers will be used to illuminate processes within the group and to raise significant theoretical problems. (By application only.)

*Fall semester.* Mr. Gergen and Mr. Peabody.

**46. Cognitive Processes.** The course will cover such topics as visual and auditory attention, pattern recognition, short and long-term memory, concept formation, thinking, and problem solving. Models of human cognition, particularly those which employ computer analogies or system analysis approaches will be examined in the light of experimental data.

*Fall semester.* Mr. Travers.

**48. Intergroup Relations.** An examination of factors that create strife and conflict among persons, and conditions enhancing interpersonal tolerance and acceptance. Particular attention will be given to minority groups, race relations, and communication between individuals of diverse backgrounds.

*Fall semester.* Mr. Peabody.

**49. The Psychology of Language.** See Linguistics 2.

**50. Perception.** The major facts and some problems of visual and auditory perception are outlined and used to acquaint the student with experimental research. Laboratory section one afternoon per week to be arranged.

*Spring semester.* Mr. Wallach.

**53. Motivation.** A survey of the concept of motivation as it is employed in diverse areas of psychology. Topics considered will range from basic homeostatic mechanisms which characterize most organisms, to more complex cognitive, emotional and social factors which are particularly human. Some major figures considered will include Darwin, Freud, Hull, Skinner, Lorenz and Piaget.

**59. Ethological Psychology.** A survey of animal behavior tracing the phylogenetic parallels between neural and behavioral development. Behavioral anal-

ysis will include such topics as imprinting, sensory processing, sex-aggression interactions, learning, and memory.

*Spring semester.* Mr. Schneider.

**64. Modes of Psychotherapy** This course will survey the theories, techniques and goals of various modes of psychotherapy, including psychoanalysis, behavior therapy, Gestalt therapy and family therapy. There will be occasional demonstrations of these treatments. Other topics include research on the *effects* of psychotherapy, the ethics and politics of psychotherapy, and biological treatments (such as chemotherapy and psychosurgery) of psychological disorders.

Prerequisite: Psychology 38.

*Fall semester.* Ms. Maracek.

**65. Political Psychology.** (Also listed as Political Science 65.) A psychological examination of individuals' participation in and impact upon politics and the effect of various political systems on individuals. Topics include public opinion in the American electoral process, ideology formation and models of post-revolutionary man. Projects will involve gathering original data and analyzing archival data.

**67. Social Psychology of Social Issues.** A course in seminar format. Students consider the scientific approach to issues of social significance. Areas such as race relations, international conflict, poverty, urbanism, drugs, and revolution may all be discussed. (Enrollment limited.)

**68. Advanced Issues in Social Psychology.** Considers selected special topics in human relationships.

*Fall semester.* Mr. Peabody.

**69. Advanced Issues in Personality.** Considers selected special topics in personality organization and dynamics.

**94. Independent Research.** Students conduct independent research projects. They typically study problems with which they are already familiar from their course work. Students must submit a written report of their work. Registration for Independent Research requires the sponsorship of a faculty member who agrees to supervise the work.

*Each semester.* Staff.

**95. Tutorial.** Any student may, with the consent of a member of the department, work under a tutorial arrangement for a single semester. The student is thus allowed to select a topic of particular interest to him, and in consultation with a faculty member, prepare a reading list and work plan. Tutorial work may include field research outside Swarthmore.

*Each semester.* Staff.

**96. Senior Paper.** Students who wish to do a comprehensive paper in the spring semester of their senior year—in lieu of comprehensive exams—may do so with the permission of the department.

*Spring semester.* Mr. Peabody.

**97. History and Systems of Psychology.** Intended to provide integration of different fields of psychology and to help majors prepare for comprehensives. Historical treatment will concentrate on the major systematic points of view. Special considerations will be given to problems overlapping several areas of psychology.

*Spring semester.* Mr. Peabody.

## Honors Seminars

**101. Perception.** Reading and discussion combined with independent experimental projects. The student is expected to know the basic facts about human perceptual mechanisms, particularly visual ones, by the time he has completed this seminar. Specific topics covered are: color vision, grouping and form, depth and distance, size, visual motion, visual and auditory localization, recognition, adaptation of perceptual functions. Scheduled laboratories are devoted to demonstrations.

**102. Learning and Behavior Theory.** See description of Psychology 37. Students are expected to attend lectures given in Psychology 37, and to participate in the laboratory.

**103. Abnormal Psychology.** A comparison of theories of disordered behavior. Genetic, psychodynamic and sociocultural approaches are considered, with emphasis on the works of Freud, Laing, and the family theorists. Topics such as the "illness" model of mental disorders, ethical issues in psychotherapy and definitions of mental health are also discussed.

*Fall semester.* Ms. Marecek.

**104. Individual in Society.** The relationship between man and his society. Basic processes including the understanding of other persons, theories of cognitive consistency, group influence and conformity. Applications to political attitudes, group prejudices. The relation of attitudes and personality. The relation of psychology to the social sciences.

*Spring semester.* Mr. Peabody.

**105. Personality.** A scrutiny of attempts to build an objective basis for "understanding the person as a whole." Contrasting theoretical orientations, techniques of observation, and specific problems will be examined. Theoretical orientations: psychoanalysis, factor analysis, learning theory, phenomenology. Observation techniques: interviews, questionnaires, fantasy material. Problems: aggression, need achievement, prediction, psychotherapy, and psychological maturity.

*Fall semester.* Mr. Gergen.

**107. Language and Thought.** See Linguistics 107.

**109. Physiological Psychology.** An in-depth analysis of the neural bases of motivation, emotion, learning, memory and language. Generalizations derived from neurobehavioral relations will be brought to bear on clinical issues.

*Spring semester.* Mr. Schneider.

**111. Cognitive Development.** A detailed survey of theory and research on cognitive development, with intensive study of selected problems. Topics include: growth of sensory and motor skills in infancy, language acquisition, and changes in cognitive functioning during the preschool, elementary school and preadolescent years. All members of the seminar will take part in observation, experimentation or teaching of young children.

**139a and b. Child Development.** A comparative study of the major theoretical approaches to child development. Psychoanalytic, cognitive-development and learning orientations are stressed. Interplay among biological maturation, experience with the physical and social environment, and the socialization practices of parents and schools is examined. Substantive topics covered include sensory-motor and social development in infancy, language acquisition,

cognitive change in the preschool and early elementary school years, moral development, and selected aspects of personality development.

*Both semesters.* Mr. Travers.

**146a and b. Cognitive Psychology.** An intensive study of selected problems in human information processing. The use of computer models to integrate experimental data will be explored. Specific topics may include visual and auditory attention, pattern recognition, short- and long-term memory, concept formation, thinking and problem-solving. Students will conduct individual or group projects of empirical research.

*Both semesters.* Mr. Travers.

**180. Thesis.** May be presented as a substitute for one seminar provided some member of the department is available to undertake the direction of the thesis.

*Each semester.* All members of the Department.

### Master's Degree

A limited number of students may be accepted for graduate study toward the Master's degree in psychology (see pp. 80-81). Students receiving the Bachelor's degree from Swarthmore are not encouraged to enter this program.

The program of work for the Master's degree requires the completion of four seminars, or their equivalent. One of the seminars must be a research seminar leading to a Thesis. The work of the seminars is judged by external examiners. The requirements for the Master's degree can normally be completed in one year.

# RELIGION

P. LINWOOD URBAN, JR., *Professor and Chairman*
J. WILLIAM FROST, *Associate Professor*
PATRICK HENRY, *Associate Professor*
DONALD K. SWEARER, *Associate Professor*
SANDRA ROBINSON, *Instructor*
HOWARD KEE, *Visiting Lecturer*
SAMUEL T. LACHS, *Visiting Lecturer*
FLETCHER J. BRYANT, JR., *Associate Dean of Students*

Religion as a field of study encompasses the historical religious traditions of Judaism, Christianity, Islam, Hinduism and Buddhism, the religions of archaic cultures, and varied dimensions of human experience on social and personal levels evidenced at all times and in all forms of human society. Because of the variegated and pervasive nature of religion among mankind, a variety of methodologies have evolved for its study including the skills of historical investigation, textual criticism, philosophical analysis, empirical description, and phenomenological modes of conceptualization. Added to these skills is the important ingredient of empathy toward the claims religious persons make regarding what they have perceived to be the ultimately real. With the broad nature of the field of religious studies in mind work in the Department of Religion has been divided according to subject matter into two broad areas: The Religious Traditions of the West, and the Religious Traditions of Asia and the

Third World. Within both divisions a variety of skills for analysis and understanding are employed.

Any course numbered 1 through 9 may be taken as introductory to other courses in the Department. Successful completion of one of these courses is normally required for admission to courses numbered 10 and above. Currently Religion 3,4, and 5 are particularly relevant to work in the Religious Traditions of the West, and Religion 6 and 7 to the Religious Traditions of Asia and the Third World. The normal prerequisite for religion as a Course major, or an Honors major or minor is completion of two courses.

The major in religion is planned through consultation with faculty members in the Department. Normally the major will be structured around one of two models: (1) either a concentration on the Religious Traditions of the West or the Religious Traditions of Asia and the Third World, or (2) a study of traditions which is explicitly cross-cultural and cross-religious.

Following model (1) the student will take more than half of his or her program in the Religious Traditions of the West or the Religious Traditions of Asia and the Third World. Following model (2) the student's program will be more equally divided between the two areas. While it is assumed that most of the work done by a Course major will be in courses and by an Honors major in seminars, the department encourages qualified Course students to consider taking seminars in areas appropriate to his or her primary interests.

As part of the major every student will do either a one-credit Senior Comprehensive Paper or a two-credit Thesis within his or her particular concentration. It is assumed that normally the Course student will do the Senior Comprehensive Paper and the Honors student the Thesis, although the honors student may opt for the one-credit Senior Comprehensive Paper in order to gain more flexibility in his or her honors program.

Where relevant to a student's program and interests, course work may be taken at Bryn Mawr or Haverford. Courses at these two institutions complementing Swarthmore offerings may be found at the end of our catalogue listings.

For advanced work in some areas of religion, foreign language facility is desirable. A student should consult members of the Department on the appropriateness of various languages, whether ancient or modern, for his own particular interests.

**3. Introduction to the Hebrew Scriptures.** A comprehensive introduction to the Hebrew Scriptures (Old Testament), with some study of the ancient Near Eastern setting, leading to an understanding of the development and variety of religious institutions, practices and beliefs in ancient Israel.
*Fall semester.* Mr. Henry.

**4. Introduction to the New Testament.** A comprehensive introduction to the New Testament, with some study of the religious situation in the Roman Empire, leading to an understanding of continuities and transformations in the emergence of Christianity and its development during the first century A.D.
*Spring semester.* Mr. Henry.

**5. Problems of Religious Thought.** The purpose of this course is to study various answers to the chief religious problems of the twentieth century. Problems include: the nature of religious experience, the existence of God, religion and morality, science and religion, and the problem of evil. Answers include those given by Martin Buber, Reinhold Niebuhr, Teilhard de Chardin, Paul

Tillich and others. The student is encouraged to find his own answers and to work out his own religious beliefs.

*Spring semester.* Mr. Urban.

**6. Patterns of Asian Religions.** An introduction to the study of religion through an examination of the teachings and practices of the religious traditions of India and China perceived as patterns of religious life. Material will be taken primarily from Hinduism and Buddhism in India, and Confucianism and Taoism in China.

*Fall semester.* Mr. Swearer.

**7. Primitive Religions.** This course is divided into two components, the first being a study of religious phenomena prevalent in pre-literate religions, including shamanism, sacrifice, initiation and witchcraft, with consideration given to problematic concepts such as primitivity, world-view, etc. The same phenomena are examined in various cultural contexts during the second part of the course, which is a study of several localized cults; emphasis is on the types of gods and/or principles around which cults are organized, and on reciprocal relations between local cults and religions of the dominant societies.

*Fall semester.* Ms. Robinson.

**8. War and Peace.** An analysis of the moral issues posed by war with consideration of the arguments for holy wars, just wars, defensive wars, pacifism, and the sanctity of life. The study of America's wars from the Revolution to Vietnam will show our nation's responses to organized violence.

*Fall semester.* Mr. Frost.

**10. Jesus and the Gospel Tradition.** Historical sources for the life of Jesus; the varying interpretations of Jesus in the Gospel tradition; the rise of critical method for evaluating the sources.

*Spring semester. Offered 1975-76.* Mr. Kee.

**11. Studies in Early Christianity: I.** A study of the processes by which the Christianization of the Roman Empire in the fourth century A.D. altered institutions, rearranged ideals and shaped individual sensibilities; concentration on the writings of men who were particularly aware in their own experience of the complex relations between Christianity and classical culture.

*Fall semester. Offered 1976-77.* Mr. Henry.

**12. Studies in Early Christianity: II.** Topic for 1974-75: The Church History of Eusebius, the church's view of its own past. A thorough study of the main source for the history of the first three centuries of the Christian church, written by Bishop Eusebius of Caesarea early in the fourth century. Eusebius's story will be placed in the wider context of Hellenistic-Roman religion and culture, and the evidence he presents will be assessed in the light both of other materials and of a critique of his historical method.

*Fall semester.* Mr. Henry.

**13. Colloquium: Early Judaism.** A study of the concepts of God, man and society in early Rabbinic Judaism.

*Spring semester.* Mr. Lachs.

**14. Medieval Philosophy.** Philosophical thought from Augustine to the 15th century. Attention will be paid both to specific problems such as universals, analogy, and epistemology and to outstanding thinkers such as Anselm, Aquinas, and Ockham. Although the primary emphasis will be historical, at-

tention will be given to the contemporary relevance of medieval thought. (Also listed as Philosophy 19.)

*Fall semester.* Mr. Urban.

**15. Formation of Christian Doctrine to 1350.** A study of the formation and classical expression of the doctrines of the Trinity, Incarnation, Atonement, Original Sin, and the Sacraments as found in Scripture and the Early and Medieval Church. Toward the end of the semester students will be given the opportunity to expound and evaluate the views of 19th and 20th century thinkers on these major themes. Such thinkers could include: K. Barth, M. Buber, R. Bultmann, K. Rahner, F. Schleiermacher, and P. Tillich.

*Fall semester. Offered 1975-76.* Mr. Urban.

**16. Catholic and Protestant Reformations.** A study of ecclesiastical, doctrinal, liturgical and experiential developments in the Christian world in the sixteenth and early seventeenth century; special attention to Martin Luther, John Calvin and the Catholic Council of Trent.

*Spring semester.* Mr. Henry.

**17. Background of Contemporary Religious Thought.** Religious thought in the 18th and 19th centuries. Emphasis will be placed upon contemporary themes and problems in the writings of Hume, Kant, Hegel, Schleiermacher, J. H. Newman, Marx and Freud.

*Spring semester. Offered 1975-76.* Mr. Urban.

**18. Existentialism and Religious Belief.** A study of one of the most influential philosophical movements of the twentieth century and its impact on religious thought. Among philosophers attention will be given to the writings of Edmund Husserl, Martin Heidegger, Karl Jaspers, and Jean-Paul Sartre. Among religious thinkers the writings of Rudolph Bultmann, John Macquarrie, Gabriel Marcel, and Paul Tillich will be read. Lectures, discussions, and reports.

*Spring semester.* Mr. Urban.

**19. Modern Jewish Thought.** A study of modern movements in Judaism from the French Revolution to the present. The rise of religious denominationalism as well as nationalism will be considered.

*Fall semester. Offered 1975-76.* Mr. Lachs.

**20. Quakerism.** The history of the distinctive religious and social ideas of the Friends from the time of George Fox until the present. Particular attention will be paid to differences in the development of Quakerism in England and America.

*Fall semester. Offered 1975-76.* Mr. Frost.

**21. History of Religion in America.** An examination of religious ideas and practices of Americans from the 17th until the 20th century. Particular emphasis will be placed upon the effects of religious pluralism, immigrant churches, the challenge of Darwinism, and the relation between the church and reform movements from Puritanism to Progressivism.

*Spring semester. Offered 1975-76.* Mr. Frost.

**22. Black Religion.** A study of the development and growth of religion among Black people in the U.S.A. from the era of slavery to modern Black theology with particular emphasis on the role of Black religion in the Black community's historic struggle for justice and self-determination.

*Spring semester.* Mr. Bryant.

**24. Hinduism and Indian Culture.** Problems of Hindu belief and practice as they relate to the cultural context of South Asia, from the medieval through the contemporary period, with emphasis on periods of transformation. The course explores relations between 1) Brahmanic Hinduism and classical Indian arts and literature, focusing on the liturgical arts and iconography, and 2) devotional Hinduism and village culture, focusing on the phenomenon of the village festival. Cultural implications of the Hindu-Muslim encounter are considered.

*Spring semester.* Ms. Robinson.

**25. Buddhism, the Quest for Nirvana.** A study of Buddhism as a normative system within the great traditions of Indian Theravada and Mahayana. Through an examination of selected primary sources the major concepts of the Buddha, the nature of the world and the individual, and Nirvana will be set forth.

*Spring semester.* Mr. Swearer.

**26. Indian Religious Texts.** A study of selected texts from Hinduism and Buddhism. Primary attention will be given to the Bhagavad Gita and Upanisads.

*Fall semester. Not offered 1974-75.* Mr. Swearer.

**27. Religion in Central and East Asia.** A study of religion within the cultural contexts of China, Japan and Tibet. The focus will be on Ch'an (Zen) in China, Jodo Shin in Japan, and Tantrayana in Tibet with special attention given to the interaction between these three Buddhist traditions and Taoism, Confucianism, Shintoism and Tibetan shamanism.

*Spring semester. Offered 1975-76.* Mr. Swearer.

**28. Mysticism East and West.** Mysticism will be studied as a distinctive religious phenomenon within the religious traditions of Asia and the West. The thought of particular mystics; e.g., Eckhart, the Baal-shem, Rumi, Ramakrishna, will be studied within the framework of questions raised by W. T. Stace and R. C. Zaehner.

*Fall semester.* Mr. Swearer.

**29. American Indian Religion.** A comparative study of the cosmologies, pantheons, myths of origins, life-cycle observances and communal practices of several Native American peoples, with concentration on the Hopi, Zuni, Navaho, Crow and Winnebago peoples. The religions are studied against the background of material culture and traditional economy and technology.

*Spring semester. Offered 1975-76.* Ms. Robinson.

**30. Myth and Ritual.** An exploration of myths and rituals from widely varied contexts, with special focus on topics such as initiation, sacrifice, and role transformations. Attention will be given to the attitudes, conceptions, and values which myths and ritual express, as well as to the psychological, social, cultural, and religious functions they serve. The internal characteristics of myth texts and ritual liturgies will be analyzed thematically and structurally using the methodologies of Mircea Eliade, Victor Turner, and Claude Levi-Strauss.

*Spring semester.* Ms. Robinson.

**35. South Asian Civilization.** (Also listed as Sociology/Anthropology 35). A topical exploration of continuity and change in South Asian civilization with emphasis on problems of variety and integration. Different disciplinary perspectives provide complementary perspectives on the condition of culture

and society at various periods from the most ancient to the present. Primary sources are used heavily, and materials from Southeast Asia are included for occasional comparison.

*Fall semester.* Ms. Robinson and Mr. Brow.

**41. Religion and Ethics.** The perennial problems of ethics and their relation to religious perspectives. Attention will be given to the analysis of moral and religious discourse. Both classical and contemporary authors will be examined.

Prerequisite: Philosophy 1 or one of the courses numbered Religion 3 through 6, or the consent of the instructor.

*Fall semester.* Mr. Urban.

**42. Religion and Literature.** Aspects of the relation between poetic sensibility and religious insight and between the world of religious metaphysics and the imaginative world of the writer. Materials will be taken mainly from the English traditions of preaching, poetry, and fiction.

Prerequisites: One introductory English Literature course numbered 2 through 10 and one of the Religion courses numbered 3 through 6.

*Spring semester.* Mr. Henry.

**43. Religion and Science.** The impact of the scientific revolution upon religious belief.

*Fall semester. Not offered 1974-75.* Mr. Urban.

**44. Asian Religions in America.** An examination of selected literary, theological and religio-institutional responses to the religions of Asia including contemporary Asian religious movements in America and an analysis of the psychological and sociological factors contributing to their appeal. Among those studied will be Aldous Huxley, Herman Hesse, Alan Watts, Thomas Merton, Trungpa Rimpoche and Swami A. K. Bhaktivedanta.

*Spring semester.* Mr. Swearer.

**45. Monasticism East and West.** An examination of Buddhist and Christian monasticism, the nature and form of the monastic life and the contribution of monasticism to these two religious traditions will serve as material for reflection on methodological issues in the study of religion as a cultural institution.

*Fall semester. Not offered 1974-75.* Mr. Swearer and Mr. Henry.

**47. Sociology of Religion.** See Sociology and Anthropology 107.

**48. Philosophy of Religion.** See Philosophy 111.

**91. Special Topics.**
Staff.

**93. Directed Reading.**
Staff.

**95. Tutorial.**
Staff.

**96. Thesis.** Majors in Course may write a two-credit thesis.
Staff.

**97. Senior Paper.** Senior majors in Course will normally write a one-credit paper as the major part of their comprehensive requirement.
*Spring semester.* Staff.

HONORS SEMINARS

**100. Paul and the Rise of Gentile Christianity.** A detailed analysis of the letters of Paul, with special reference to the interpretation of Christianity in the Roman world.
*Spring semester. Offered 1975-76.* Mr. Kee.

**101. Early Christianity.** The development of Christian thought and institutions from the end of the first century to the time of Augustine (early fifth century). Among topics considered are the following: church and state, missionary expansion, episcopacy, sacraments and liturgy, councils, doctrinal development and dogmatic definition, heresy, beginnings of monasticism.
*Fall semester.* Mr. Henry.

**102. Early Judaism.** A study of the concepts of God, man and society in early Rabbinic Judaism.
*Spring semester.* Mr. Lachs.

**103. Conversion.** A study of the processes, both individual and social, by which movement takes place into, out of, and between religions. The method of inquiry will be comparative analysis of examples of conversion in a variety of cultural and religious contexts.
*Spring semester. Offered 1976-77.* Mr. Henry.

**104. Medieval Philosophy.** Students may prepare for an Honors Examination in Medieval Philosophy. They will normally do so by taking the course (Religion 19) and in addition meeting in Tutorial with the instructor.
Mr. Urban.

**105. Types of Religious Philosophy in the West.** Representative thinkers and schools of thought in the present century. These will include Karl Barth, F. H. Bradley, Martin Buber, Rudolf Bultmann, Reinhold Niebuhr, Paul Tillich, and A. N. Whitehead.
*Fall semester. Offered 1975-76.* Mr. Urban.

**106. The Idea of God in Western Thought.** An examination of writings which have contributed most to Western concepts of God. The study will include Plato, Aristotle, the Bible, Athanasius, Augustine, Thomas Aquinas, Luther, Calvin, Kant, Schleiermacher, Rudolf Otto, John Baillie, and others.
*Fall semester.* Mr. Urban.

**107. The Reformed Traditions.** An examination of the doctrines and institutional history of the Reformed Churches from the Reformation until the middle of the eighteenth century. Topics to be covered include Zwingli, Calvin, the Reformation in Scotland, English and American Puritanism, Nonconformity, John Locke, and Jonathan Edwards.
*Spring semester. Offered 1975-76.* Mr. Frost.

**108. Devotional Religion in India: Hinduism and Islam.** The seminar involves analysis of devotional practices in homes, village shrines, temples and mosques of India, and examines the extent to which these practices articulate

a comparison between Hinduism and Islam. Emphasis is on problems in religious syncretism during critical moments of medieval and modern Indian history. Topics include representational objects of devotion, audio-visual aids to devotion, iconoclasm, pilgrimage, roles of sacred specialists and religious ordeals and virtuosity.

*Fall semester. Offered 1975-76.* Ms. Robinson.

**109. Religion in Southeast Asia.** A study of the teachings and practices of Buddhism within the historical and cultural context of Ceylon and Southeast Asia. Particular attention will be given to the classical definition of Theravada Buddhism in Ceylon; the influence of Brahmanism and Buddhism on the development of conceptions of state and kingship; the nature and role of the monastic life; and the character of temple and home rituals.

*Spring semester. Offered 1975-76.* Mr. Swearer.

**110. Cult and Symbol: Goddess Cults.** The specific focus of this seminar will vary. It will first be offered on the topic of goddess cults with material drawn heavily from ancient Greece and India. Approaches range from archetypal analyses to primary interpretations by worshippers.

*Spring semester. Not offered 1974-75.* Ms. Robinson.

**111. Types of Religious Philosophy in Asia.** Seminal thinkers and schools of thought in India and China. Among those to be included will be Nāgārjuna, Aśvaghosha, Śankara and Rāmānuja in India; Mencius, Chuang-tzu, Chu Hsi and Wang Yang-ming in China.

*Spring semester.* Mr. Swearer.

**180. Thesis.** Majors in Honors will ordinarily write a two-credit thesis as part of the requirements for the major although they may elect to write the one-credit senior paper.

## Courses Complementing Religion Offerings At Swarthmore

BRYN MAWR COLLEGE:

104a and b. History and Literature of Judaism Mr. Lachs
001. Elementary Hebrew Mr. Rabi
101. Readings in the Hebrew Bible Mr. Rabi
311. Seminar in Hebrew Literature Mr. Rabi
208b. Paul and Gentile Christianity Mr. Anderson

HAVERFORD COLLEGE:

110A. Islam Mr. Kanael
119. Religions of the Greeks and the Romans Mr. Larkin
343. Plotinus (Plato, Plotinus, Dionysius the Areopagite) Mr. Luman

# SOCIOLOGY AND ANTHROPOLOGY

LEON BRAMSON, *Professor and Chairman*
ROBERT C. MITCHELL, *Associate Professor**
STEVEN PIKER, *Associate Professor*
ELIJAH ANDERSON, *Assistant Professor*
JAMES BROW, *Assistant Professor*†
HANS-EBERHARD MUELLER, *Assistant Professor*
JENNIE-KEITH ROSS, *Assistant Professor*
FRANCES SCHWARTZ, *Lecturer*

Although Sociology and Anthropology arose initially out of divergent historical traditions, they are engaged in a common task. Studies in the Department are directed toward the discovery of the general principles which help to explain the order, meaning, and coherence of human social and cultural life. To that end, work in the Department will emphasize the comparative analysis of societies and social institutions; the structure and functioning of human communities; the principles of social organization and disorganization; and the conditions which tend to foster continuity and change, consensus and conflict. Emphasis will also be laid on the relevance of Sociology and Anthropology to social problems in the modern age, particularly to the question of the nature, conditions, and limits of human freedom.

## Requirements and Recommendations

Either course 1a. or 1b. will normally be prerequisite to all other work in the Department. (A number of courses are exceptions to this rule: 19. Human Evolution, 24. Psychological Anthropolgy, 26. Language, Society and Culture, 35. South Asian Civilization, and 41. Theravada Buddhism. See the listings of these courses for information about prerequisites.) Applicants for a major will be expected to have taken one other course in the Department beyond the introductory course. Course majors will complete a *minimum* of eight courses in the Department. In their senior year, course majors will write a thesis. This involves one semester of thesis tutorial during both the fall and the spring semesters of the senior year. In addition to a double-credit thesis (course 96-97) and course 1a. or 1b., majors will normally take 25. Methods of Social Research (a half course) and 50. Intellectual Foundations of Contemporary Sociology and Anthropology, and any two of the following courses:

20. Urban Sociology
23. Myth, Ritual and Social Structure
24. Psychological Anthropology
29. Sociology of Religion
44. Social Stratification
46. Political Anthropology
47. Education and Society
48. Social Evolution
49. Sociology of Occupations and Professions

†Absent on leave, spring semester, 1974-75.
*Fall semester, 1974-75.

56. Urban Anthropology
59. Social and Cultural Change
62. Political Sociology
64. Economic Anthropology

Majors in the Department in both Honors and Course are advised that Myth, Ritual and Social Structure and Social Stratification in course or seminar are central offerings in Anthropology and Sociology, respectively.

Students who contemplate majoring in Sociology and Anthropology are urged to take course 25. Methods of Social Research and 50. Intellectual Foundations of Contemporary Sociology and Anthropology during their sophomore year.

**1a. Equality, Hierarchy, and Social Change.** Comparative study of simple and complex societies, with particular emphasis on the conditions that give rise to social inequality, conflicting interests, and the strategies through which individuals and groups struggle to enhance their access to wealth, power, and prestige. The course will explore the implications of these conditions for social change and the quest for an egalitarian society.

*Fall semester.* Mr. Brow, Mr. Mitchell, Mr. Mueller, Ms. Schwartz.

**1b. Human Societies: A Comparative Approach.** A comparison of types of human societies from the points of view of sociology and anthropology. Hunting and gathering, peasant, and urban-industrial societies will be examined, with particular reference to contrasting patterns of social organization. Case studies will include the meaning of work, religious institutions, and—for urban-industrial society—ethnic and cultural differences. Consideration will be given to the intentional creation of community, with special reference to utopian communities.

*Fall semester.* Mr. Anderson, Mr. Piker.

**19. Human Evolution.** (Cross-listed as Biology 19) This course deals with evolution of man and culture. Central issues are: the principles and mechanisms of evolution; the place of primates in the vertebrate sub-phylum; the taxonomy of primates; hominid radiation and the emergence of *Homo sapiens*. Other issues to be considered will focus on culture as a mode of adaptation. Specifically, attention will be given to the relations between human biology, psychology, and culture. Not open to freshmen. This course does not satisfy the distribution requirement in any group.

No prerequisites. Biology 1 is recommended.

*Fall semester. Not offered in 1974-75.* Mr. Jenkins, Mr. Piker.

**20. Urban Sociology.** An introduction to urban sociology with emphasis on theoretical and methodological issues associated with participant-observation as a research tool. Attention will be given to the contributions of the Chicago school of sociology in the urban field. Students will be expected to carry out a research project.

*Spring semester. Not offered in 1974-75.* Mr. Anderson.

**23. Myth, Ritual and Social Structure.** The social anthropological study of myth and ritual encompasses several forms of structural, historical and functional analysis. The approaches of Durkheim, Evans-Pritchard, Levi-Strauss, Leach, and others are compared and contrasted, with emphasis on such problems as the logic and rationality of mythic thought and ritual action, the translation and interpretation of collective representations, the relations among

mythological, ritual and social structures, and the use of myth and ritual in political and economic affairs.

*Spring semester. Not offered in 1974-75.* Mr. Brow.

**24. Psychological Anthropology.** The relation between the psychological attributes of individuals and the workings of institutions and societies. The course examines the following specific issues: the evolution of the psychological and symbolic capacities which underlie culture; socialization, or the transmission of culture from generation to generation; theoretical viewpoints on the individual in society; culture and mental health. Case materials drawn from non-Western cultures as well as from the West.

Prerequisities: S&A 1a or 1b, or introductory work in Psychology, or permission of the instructor.

*Spring semester.* Mr. Piker.

**25. Methods of Social Research.** Half course. (Cross-listed as Political Science 25.) An introduction to empirical social science, normally required of all majors. Topics for study include: the basis of inquiry, the design of social research, problems of sampling, measurement, statistical analysis, survey research, and observation. The following optional half-course modules may also be added: (Some will be offered each year.)

25b. Survey design and analysis
25c. Interviewing of children
25d. Case studies
25e. Experimental design and analysis
25f. Participant observation
25g. Clinical observation
25h. Cross-national research
25i. Simulation

*Spring semester.*

**26. Language, Society, and Culture.** The relation of language to culture and society will be investigated through study of the influence of social and cultural context on language use, the distribution of linguistic, social, and cultural borders in speech communities, and the interrelations of the participants, topics, setting, code and communication channels in the speech event. Specific topics will include multi-lingualism, nonverbal communication, and linguistic relativity. Students will do several short observation projects in these areas.

Prerequisites: S&A 1a or 1b, Linguistics 1, or permission of the instructor.

*Fall semester.* Ms. Ross.

**28. Deviance.** This course will examine the social and intellectual background of the sociology of deviant behavior in the United States. Contending approaches to the study of deviance will be compared and evaluated. Major emphasis will be placed on the emergence of "labelling theory" and its implications for social problems related to deviance.

*Spring semester.* Mr. Anderson.

**29. Sociology of Religion.** (Cross-listed as Religion 47) Examination of the relation between religion and society. Sociological theories of religion, religious organization and behavior, religion and social change, process of institutionalization and secularization.

*Spring semester. Not offered in 1974-75.*

**35. South Asian Civilization.** (Cross-listed as Religion 35). A topical exploration of continuity and change in South Asian civilization, with emphasis on problems of cultural variety and integration. Different disciplinary approaches

provide complementary perspectives on the condition of culture and society at various periods from the most ancient to the present. Primary sources are used and comparative materials from Southeast Asia are included for occasional comparison. No prerequisites.

*Fall semester.* Mr. Brow, Ms. Robinson.

**41. Theravada Buddhism: A Social History.** The course will take up the following issues: 1) the cultural and historical context in which Buddhism emerged in India 2,500 years ago; 2) classical Theravada doctrines, and their correlates in contemporary religious institutions in Theravada societies; 3) the juxtaposition of Buddhist and non-Buddhist religious elements in Theravada societies; and 4) the reciprocal relations between Buddhism and social and political change in contemporary SE Asia. No prerequisites.

*Fall semester.* Mr. Piker.

**42. Caribbean Society.** A review of the attempt to develop generalizations about the structure of Caribbean society. Theoretical materials will focus on the historical role of slavery, the nature of plural societies, race, class, ethnicity, and specific institutions such as the family, the school, the church, and the political structure.

*Fall semester.* Mr. Bramson.

**44. Social Stratification.** Comparative study of structured social inequality, processes of class formation, and conditions of class conflict since the industrial revolution.

*Spring semester.* Mr. Mueller.

**45. Anthropology and Education.** (Cross-listed as Education 45). Anthropological perspectives on social process in formal and informal learning situations both cross-culturally and within United States subcultures. The course will explore the dynamics of classroom interaction, the school as a social system, the school in relation to the community, value and role conflicts, education as an implement of social change, and modes of intentional and unintentional socialization.

*Fall semester. Not offered in 1974-75.* Ms. Schwartz.

**46. Political Anthropology.** This course will utilize the comparative perspective of anthropology to study the ways in which authority is acquired and accepted as legitimate, the ways in which decisions are made or avoided, and the ways in which conflict is defined, mediated, and resolved or extended. Subject matter will include political communities in various cultural contexts and at various levels of social and technological complexity.

*Spring semester.* Ms. Ross.

**47. Education and Society** (also listed as Education 75). Comparative study of the functions of schools from the perspective of sociology and anthropology. Among the topics to be discussed are the relation of educational institutions to other sectors of society, and the question of alternatives to schooling in both modernizing and "post-industrial" societies.

*Fall semester.* Mr. Bramson.

**48. Social Evolution.** An examination of theories of social evolution with particular reference to prehistorical developments. Substantial emphasis will be placed on the social transformations associated with the invention of agriculture, the beginnings of urban life, advances in communications technology,

and the origins of the state. The emergence of social stratifications and civilization in selected areas of both the Old and New Worlds will be studied and compared. Recent research applying the strategy of cultural ecology will be related to the earlier theories of Morgan, Marx and Engels, Tylor, and others.

*Not offered 1974-75.* Mr. Brow.

**49. Sociology of Occupations and Professions.** Analysis of the social organization of work in modern societies, the concept of career, the development of professionalization, the nature of work-satisfaction. Occupational subcultures, including law, medicine, science, art, public service, education and the military; relation of work and leisure; social relations in work; the special problems of women at work; varieties of commitment to work; enforced leisure, unemployment and retirement.

*Spring semester.* Mr. Bramson.

**50. Intellectual Foundations of Contemporary Sociology and Anthropology.** Examination of fundamental and recurrent theoretical issues in sociology and anthropology from the perspective of intellectual history.

*Spring semester.* Mr. Bramson.

**55. Research in Anthropology and Education.** Focus on student field work in neighboring school and community. Application of anthropological research methods to an actual educational institution. Exploration of the impact of research for school personnel in educational planning and community relations.

Prerequisite: permission of the instructor.

*Spring semester.* Ms. Schwartz.

**56. Urban Anthropology.** The course will focus on the application of anthropological theory and method to the urban context. Specific problems will include the role of kinship, ritual, and ethnicity in a wide range of urban settings, including cities in Africa, Latin America, Europe, and the U. S.

*Spring semester.* Ms. Ross, Mr. Anderson.

**59. Social and Cultural Change.** Classical and modern theories of change. Case studies of long term and short term aspects of change, including the industrial revolution, the modernization process, collective behavior, and aspects of contemporary and future American society.

*Fall semester.* Mr. Mitchell.

**62. Political Sociology.** Study of political elites, political institutions, normal politics, and protest movements from the perspective of comparative historical sociology.

*Not offered in 1974-75.* Mr. Mueller.

**64. Economic Anthropology.** Comparative analysis of peasant and tribal economies with emphasis on the relations between economic transactions and other aspects of society. Topics to be considered include the structure of reciprocity and exchange in non-market economies, systems of land tenure, the concept of surplus and its relation to social inequality, and some problems of economic development and social change in peasant communities.

*Fall semester. Not offered in 1974-75.* Mr. Brow.

**81. Colloquium: The Sociology of Intellectual Life.** Study of the social conditions of intellectual life in the realms of science, literature, art, and

music. Particular attention will be given to the social aspects of creative process and changes in cultural taste.

*Spring semester.* Mr. Mueller.

**91. Special Topics. Toward a New Historical Sociology: Marx and Weber.** Intensive analysis of the sociology of Marx and Weber for the purpose of building the conceptual foundations of a new historical sociology. This course offers students an opportunity to participate in the theoretical workshop of a school of thought aiming to establish a new paradigm for sociological research.

*Fall semester.* Mr. Mueller.

**91. Special Topics. Aging in Society.** The course will examine aging from a cross-cultural perspective with the goal of distinguishing universal aspects of the aging process from the diverse effects of social and cultural context on the roles of older people and the use of age as a principle of group definition. Specific problems will include relations between generations, political organization of older people, and the role of older people in the family and the household.

*Spring semester.* Ms. Ross.

**93. Directed Reading.** Individual or group study in fields of special interest to the students not dealt with in the regular course offerings. Consent of the chairman and of the instructor is required.

Members of the Department.

**96. Thesis.** Theses will be required of all Course majors. Seniors in the Course program will normally take two consecutive semesters of thesis tutorial (Course 96). Students are urged to have their thesis proposals approved as early as possible during the junior year.

Members of the Department.

## Honors Seminars

**101. Economic Anthropology.** Comparative analysis of peasant and tribal economies with emphasis on the relations between economic transactions and other aspects of society. Topics to be considered include the structure of reciprocity and exchange in non-market economies, systems of land tenure, the concept of surplus and its relation to social inequity, and some problems of economic development and social change in peasant communities.

*Not offered 1974-75.* Mr. Brow.

**102. Myth, Ritual and Social Structure.** The social anthropological study of myth and ritual encompasses several forms of structural, historical and functional analysis. The approaches of Durkheim, Evans-Pritchard, Levi-Strauss, Leach, and others are compared and contrasted, with emphasis on such problems as the logic and rationality of mythic thought and ritual action, the translation and interpretation of collective representations, the relations among mythological, ritual and social structures, and the use of myth and ritual in political and economic affairs.

*Fall semester.* Mr. Brow.

**104. Psychological Anthropology.** This seminar deals with a growing interdisciplinary field that draws upon cultural anthropology, human evolution and biology, psychology (particularly developmental and cognitive), and linguistics.

The following specific topics will be treated: psycho-biological foundations of culture, human maturation, socialization, and culture and mental health.

*Spring semester.* Mr. Piker.

**105. Modern Social Theory.** The social and intellectual background of the rise of social science, with consideration of selected social theorists and emphasis on the relation of ideology to theory and research in sociology.

*Offered fall semester, 1975.*

**107. Sociology of Religion.** Religion as a cultural institution: the relations between religious belief and practice, psychological properties of individuals, and society. The following specific topics will be treated: religious evolution; religion as a force for both social stability and social change; the psychological bases for religious belief. Major theories to be considered include those of Max Weber, Emile Durkheim, and Sigmund Freud.

*Spring semester.* Mr. Piker.

**108. Social Stratification.** Comparative study of structured social inequality, processes of class formation, and conditions of class conflict since the industrial revolution.

*Fall semester.* Mr. Mueller.

**109. Social and Cultural Change.** Classical and modern theories of change. Case studies of long term and short term aspects of change, including the industrial revolution, the modernization process, collective behavior, and aspects of contemporary and future American society.

*Fall semester. Not offered in 1974-75.*

**110. Urban Sociology and Politics.** (Cross-listed as Political Science 110) The impact of urbanization on contemporary politics and social structure, from the perspective of political science and sociology. Emphasis will be placed on empirical study of selected problems, such as physical planning, social welfare, and political organization.

*Fall semester. Not offered in 1974-75.*

**112. Sociolinguistics.** The influence of social and cultural context on language use will be investigated, with special emphasis on multilingualism, creoles and pidgins, language standardization and planning, and the interrelations of participants, topics, setting, code and communication channels in the speech event.

*Fall semester.* Ms. Ross.

**114. Political Sociology.** Study of political elites, political institutions, normal politics, and protest movements from the perspective of comparative historical sociology.

*Spring semester.*

**180. Thesis.** Honors students who choose to do so will customarily write theses during the senior year. Students are urged to have their thesis proposals approved as early as possible during the junior year.

Members of the Department.

# VI

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*Absent on leave, fall semester, 1974-75.

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## Standing Committees of the Faculty, 1974-75

Academic Requirements: Pagliaro, *Chairman.*
Bryant, Cowden, Frost, Mueller, J. Mullins, Pryor, Skeath, Stott, P. Thompson, Vivell/Townsend,* Willis.

Academic and Cultural Support: Bryant, *Chairman.*
E. Anderson, Cratsley, Morrill, Pagliaro, S. Robinson, Stott.

Admissions and Scholarships: Quesenbery, *Chairman.*
Bryant, Carlson, Cullen, England, Jenkins, McCrumm, Wright/Li.

Black Studies: Piker, *Chairman.*
C. Gilbert, James, Williamson, Wood.

Center for Social and Policy Studies: C. Gilbert, *Chairman.*
Bramson, Dunn, Gergen, Iversen, Kemper, E. Mullins.

Computer: E. Mullins, *Chairman.*
Cook, Pagliaro, Press, Solomon, Steinbrook.

Cooper: Devin, *Chairman.*
Boyer, Bradley, Kemper, Landis, S. Robinson, Sharpe, Shorr, Swing/Freeman, H. Williams.

Council on Educational Policy: Pagliaro, *Chairman.*
Dunn, England, Friend, Henry, Lacey, Ross, Swearer.

*Names coupled indicate that, because of leaves of absence, one member is serving in the fall semester and the other in the spring.

Committee on Faculty Procedures: Friend, *Chairman.*
Mangelsdorf, T. Mitchell, Oberdiek, Pagliaro, Rosen, Saffran, S. Snyder.

Curriculum: Kitao, *Chairman.*
Brow/M. Anderson, Mangelsdorf, T. Mitchell, V. Ooms, Pagliaro, Press, Stott, Sweigart.

Faculty and Staff Benefits: Cratsley, *Chairman.*
Bramson, Cook, H. Foulke, Maass, T. Miller, Oberdiek, Rawson, Saffran, Shero, R. Williams.

Committee on Prizes and Fellowships: Field, *Chairman.*
Cohn, Kettering, Lieberthal, Moll, R. Smith, Stott, Suplinskas, Townsend.

Health Sciences: D. Thompson, *Chairman.*
Clark, Heckscher, Lange, F. Martin, Peabody, B. Snyder, Stott, Weiss.

Library: Press, *Chairman.*
DuPlessis, Frost, Hershey, Kurth, Maass, Pagliaro, Weber.

Master of Arts: Bilaniuk, *Chairman.*
Krugovoy, Rawson, Rhys.

Physical Education and Athletics: Skeath, *Chairman.*
Avery, Davis, Elverson, Hammons, Hess, Hinchey, Marecek, Stetson.

Promotion and Tenure: Friend, *Chairman.*
Morrill, North, Pagliaro, Pennock, Pierson.

Research Ethics: Lacey, *Chairman.*
Barus, Gergen, F. Schwartz, Williamson.

Research Support: Schneider, *Chairman.*
Carpenter, Eisler, Heintz, Tafoya.

Schedule of Classes: J. Mullins, *Chairman.*
Beik, Fehnel, Henry, Prudente, Saffran, Stull/Raff.

Teacher Education: Pagliaro, *Chairman.*
Brodhead, Hess, James, Rosen, Roza/S. Smith, Savage, F. Schwartz, Travers, Wood.

Teaching Technology: Rosenberg, *Chairman.*
Brodhead, Davies, Hickman, Hinz, E. Mullins, Swearer, Teitelbaum.

Use of College Facilities: Cook, *Chairman.*
Hess, Landis, Skeath, Stanton, Stetson.

Secretary to the Faculty: Klotz.

# Divisions and Departments

## I. DIVISION OF THE HUMANITIES

Thomas N. Mitchell, *Chairman.*

Art, Hedley H. Rhys, *Chairman.*

Classics, Helen F. North, *Chairman.*

English Literature, Susan B. Snyder, *Acting Chairman.*

History, Harrison M. Wright, *Chairman.*

Mathematics, David Rosen, *Chairman.*

Modern Languages, Philip Metzidakis, *Chairman.*

Music, Peter Gram Swing, *Acting Chairman.*

Philosophy, Hugh M. Lacey, *Chairman.*

Psychology, Kenneth J. Gergen, *Chairman.*

Religion, P. Linwood Urban, *Chairman.*

## II. DIVISION OF THE SOCIAL SCIENCES

Van Doorn Ooms, *Chairman.*

Economics, Frank C. Pierson, *Chairman.*

Engineering, H. Searl Dunn, *Chairman.*

History, Harrison M. Wright, *Chairman.*

Mathematics, David Rosen, *Chairman.*

Philosophy, Hugh M. Lacey, *Chairman.*

Political Science, J. Roland Pennock, *Acting Chairman.*

Psychology, Kenneth J. Gergen, *Chairman.*

Sociology and Anthropology, Leon Bramson, *Chairman.*

## III. DIVISION OF THE NATURAL SCIENCES AND ENGINEERING

David L. Bowler, *Chairman*

Astronomy, Wulff D. Heintz, *Chairman.*

Biology, Norman A. Meinkoth, *Chairman.*

Chemistry, Raymond J. Suplinskas, *Chairman.*

Engineering, H. Searl Dunn, *Chairman.*

Mathematics, David Rosen, *Chairman.*

Philosophy, Hugh M. Lacey, *Chairman.*

Physics, Paul C. Mangelsdorf, Jr., *Acting Chairman*

Psychology, Kenneth J. Gergen, *Chairman.*

# ADMINISTRATION

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**John J. Creighton,** B.A., Swarthmore College; M.B.A., University of Pittsburgh, Assistant to the President.

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**Edward K. Cratsley,** B.A., College of Wooster; M.B.A. and D.C.S., Harvard University, Vice President— Administration, Finance; Controller.

**Kendall Landis,** B.A., Swarthmore College; M.A., Wesleyan University, Vice-President—Alumni, Development, Public Relations.

**Pauline M. Carroll, Alison Carswell Naylor,** B.A., Swarthmore College, Secretaries.

## PROVOST'S OFFICE

**Harold E. Pagliaro,** A.B., M.A. and Ph.D., Columbia University, Provost.

**Jacqueline Robinson,** Secretary.

**Gilmore Stott,** B.A. and M.A., University of Cincinnati; B. A. and M.A. University of Oxford; M.A. and Ph.D., Princeton University. Associate Provost—Registrar.

## DEANS' OFFICES

**J. Edward Skeath,** B.A., Swarthmore College; M.A. and Ph.D., University of Illinois, Dean of Men.

***Deborah Townsend,** B.A. and M.A., University of Michigan, Dean of Women.

**Susan Vivell,** B.A., Swarthmore College; M.A., University of California at Los Angeles, Acting Dean of Women, fall semester, 1974-75.

**Fletcher J. Bryant, Jr.,** B.A., Lincoln University; M. Re. Ed., Boston University School of Theology; B.D., Colgate-Rochester Divinity School, Associate Dean of Students and Director of Minority Support Programs.

**Phyllis H. Raymond,** B.A., Indiana University; M.A., Swarthmore College. Assistant to the Deans.

*Absent on leave, fall semester, 1974-75.

**Lynne Davis Mifflin,** B.A. and M.A., Swarthmore College, Director of Financial Aid and Adviser to Foreign Students.

**Gloria Carey Evans,** B.A., Western Washington College of Education; M.S., University of Washington; Ph.D., Stanford University, Consultant for Testing and Guidance.

Head Residents in Dormitories:

**John Wilson,** B.A. and M.A., St. Joseph's College, and **Dorothy Wilson,** Parrish Hall.

**Virginia E. Myers,** Willets Hall.

**Jerome H. Wood, Jr.,** B.A. Howard University; Ph.D., Brown University, Wharton Hall.

**D. Gretchen Bowen, Alma Stewart, Julia Lemon, Vera B. Morrison,** Secretaries.

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**Douglas C. Thompson,** B.S., Swarthmore College, Associate Dean of Admissions.

**Barbara Pearson Lange,** Associate Dean of Admissions.

**John H. Humphrie, Jr.,** B.A., Swarthmore College; Assistant to the Dean of Admissions.

**David A. Walter,** B.S., Swarthmore College; M. Div., Princeton Theological Seminary. Assistant Dean of Admissions.

**Wallace Ann Ayres,** B.A., Swarthmore College; Ed.M., Harvard University, Assistant Dean of Admissions (part time).

**Emily Bonsall,** Administrative Assistant.

**Barbara A. Daly, Sara-Page White,** B.A., Swarthmore College, Secretaries.

## REGISTRAR'S OFFICE

**Gilmore Stott,** B.A. and M.A., University of Cincinnati; B.A. and M.A., University of Oxford; M.A. and Ph.D., Princeton University. Associate Provost—Registrar.

**Jane H. Mullins,** B.A., Swarthmore College, Associate Registrar.

**Marjorie L. Webb,** B.A., University of Delaware; **Nancy Bell, Natalie Kruczaj, Mary Etta Zwell,** Secretaries.

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**Margery J. Hiltz,** Secretary to the Librarian.

**Pauline Marshall,** B.S., Simmons College; **Shirley F. Kirby,** B.A., Washington University, **Marjorie D. Smith,** B.A., University of Connecticut; Assistants, Serials Section.

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**Mary C. Kerbaugh,** B.A., University of Pennsylvania; M.S. in L.S., Drexel University, Assistant Order Librarian.

**Monique Constantino,** Assistant.

**Howard H. Williams,** B.A., Lake Forest College; M.A. and B.S. in L.S., Columbia University, Head, Reference Department.

**Lois G. Peterson,** B.A., Oberlin College; **Elizabeth H. Phillips,** B.A., Swarthmore College, Assistants.

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**Catherine J. Smith,** B.A., Swarthmore College; B.S. in L.S., Drexel University, Head, Circulation Department.

**Nancy C. Bech; Pauline E. Hallman; Felicia Heyman; Anne J. Perkins; Jean Pfeiffer; Martha Scott,** Assistants.

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**Emi K. Horikawa,** B.E., University of Nevada, M.A., University of Utah; **Nancy Wyllie,** B.A., Oberlin College, Assistants.

**George K. Huber,** B.A., University of Pennsylvania; M.S. in L.S., Drexel University, Music Librarian.

Friends Historical Library

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**Joseph E. Spafford,** B.S., University of Missouri, Planning Engineer.

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**June Carnall,** Dormitory & Housing Coordinator.

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**Joseph W. Oppe,** B.S., Marietta College; M.S., University of Idaho, Director of the Arthur Hoyt Scott Horticultural Foundation and Swarthmore College Horticulturist.

**Loretta Hodyss,** B.S., Iowa State University; M.S., University of Delaware, Horticulturist.

**David Melrose,** Assistant Director.

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**Douglas C. Thompson,** B.S., Swarthmore College, Advisor.

**Bonnie Harvey,** Secretary.

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**Jeffrey M. Bell,** B.A., University of Rochester; M.D., Hahnemann Medical College, Associate Director.

**Paul T. Cass,** B.A., Juniata College; M.D., Hahnemann Medical College, College Physician.

**Ruth Ann Fitzpatrick,** B.A., Holy Family College; M.D., Medical College of Pennsylvania, College Physician.

**Mary L. Pratt,** B.A., Rosemont College; M.D., Hahnemann Medical College, Consulting Gynecologist.

**Erwin R. Schmidt, Jr.,** B.S., Yale University; M.D., University of Wisconsin, Consulting Orthopedic Surgeon.

Consulting Psychiatrists:

**J. W. Lyons,** B.A., University of Scranton; M.D., University of Pennsylvania.

**Silas L. Warner,** B.A., Princeton University; M.D., Northwestern University.

**Sylvia S. Yedinsky,** B.A., University of Pennsylvania College for Women; M.D., Women's Medical College of Pennsylvania.

Consulting Psychologist:

**Frederic J. Levine,** B.A. and M.A., Brooklyn College; Ph.D., University of Michigan.

Nurses:

**E. Elizabeth McGeary,** R.N., Head Nurse, **Eleanor Battin,** R.N., **Elizabeth Cozine,** R.N., **Helen R. Martin,** R.N., **Joan Morton, R.N.**

**Janet B. Hazzard,** R.N., Secretary.

## DEPARTMENTAL SECRETARIES, ASSISTANTS AND TECHNICIANS

Art: **Teresa Klingler.**

Astronomy: **Mary MacD. Jackson,** B.A., Swarthmore College; **Elizabeth H. Kuhlman,** B.A., Mount Holyoke College; **Louise H. Mitchell,** B.S., West Chester State College; **Marcella Shanley,** Hunter College; **Michael D. Worth,** A.A., Keystone Junior College.

**Janet Martin,** Secretary.

Biology: **Lloyd Merritts; Otto Hebel.**

Chemistry: **Jacqueline Bray; Edward C. Kehl.**

Economics: **Eleanor Greitzer; Mary E. Renneisen.**

Education: **Ruth Boyle.**

Electronics Technician: **John J. Dougherty.**

Engineering: **Frances Shero,** B.A., Swarthmore College; **Josephine Booth; F. S. Hockman.**

English Literature and Division of the Humanities: **Thelma M. Miller.**

History: **Eleanor W. Bennett.**

Mathematics and Division of the Social Sciences: **Dorothy D. Blythe.**

Modern Languages: **Martha Dieffenbach.**

Music: **Mary G. Gatens.**

Philosophy: **Alta K. Schmidt.**

Physical Education for Men: **Elizabeth Bassett; Octavius Holland; David Lester.**

Physical Education for Women: **Esther R. Gosser.**

Physics: **John R. Andrews.**

Political Science: **Eleanor Greitzer; Mary E. Renneisen.**

Center for Social and Policy Studies: **Louise Collozzi.**

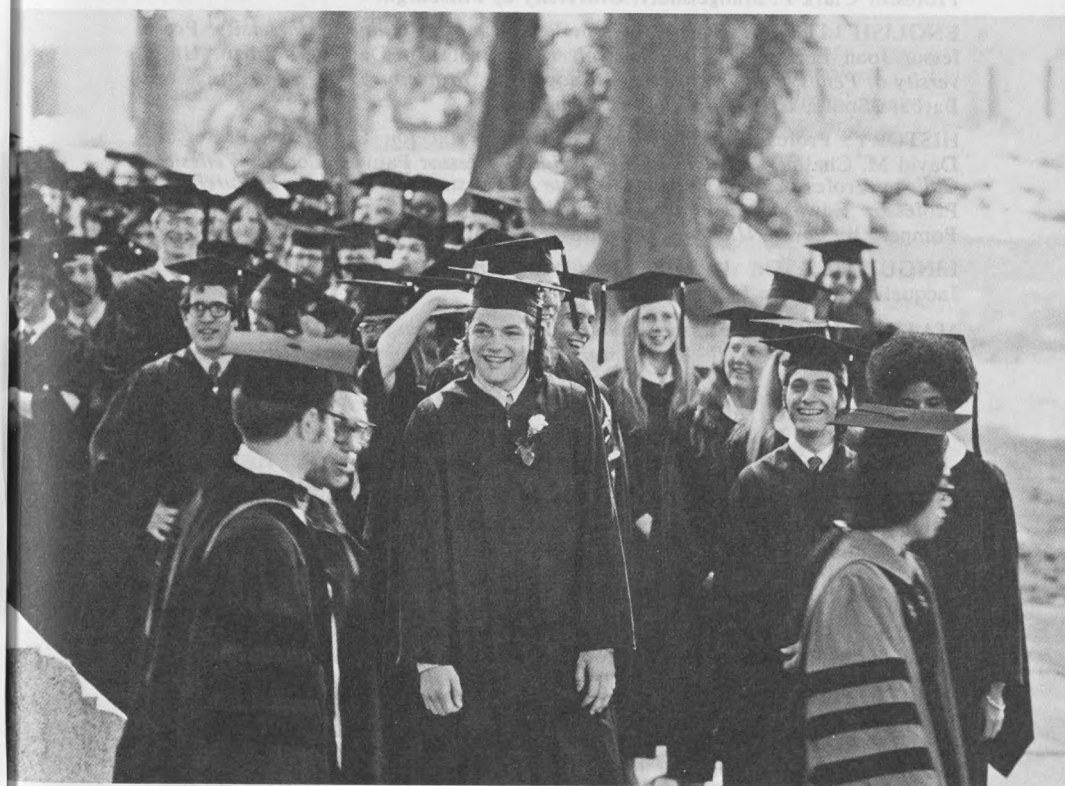
Psychology: **Virginia S. Greer; Otto Hebel; Sue Santa Maria; Winnifred Vaules.**

Religion: **Alta K. Schmidt.**

Sociology and Anthropology: **Pauline B. Federman.**

# VII

## VISITING EXAMINERS
## DEGREES CONFERRED
## AWARDS AND DISTINCTIONS
## ENROLLMENT STATISTICS
## PLAN OF COLLEGE GROUNDS



*Commencement Procession*

# VISITING EXAMINERS 1974

ART: Professor Dorothy W. Gillerman, *Brown University;* Professor Robert A. Koch, *Princeton University;* Professor Arthur S. Marks, *Bryn Mawr College.*

ASTRONOMY: Dr. Dermott Mullan, *Bartol Research Foundation.*

BIOLOGY: Professor Harry O. Corwin, *University of Pittsburgh;* Dr. Patricia J. DeCoursey, *Belle W. Baruch Coastal Research Institute, University of South Carolina;* Professor Philip B. Dunham, *Syracuse University;* Professor Dietrich Kessler, *Haverford College;* Professor Lawrence H. Pike, *George Mason University.*

CHEMISTRY: Professor Colin McKay, *Haverford College;* Professor Jay Young, *Bryn Mawr College.*

ECONOMICS: Professor Earl Adams, *Allegheny College;* Professor Benjamin I. Cohen, *Yale University;* Professor Arnold Collery, *Amherst College;* Professor Larry Darby, *Temple University;* Professor Holland Hunter, *Haverford College;* Professor Robert Summers, *University of Pennsylvania.*

ENGINEERING: Professor John Eric Edinger, *University of Pennsylvania;* Professor Clark P. Mangelsdorf, *University of Pittsburgh.*

ENGLISH LITERATURE: Professor Leo Braudy, *Columbia University;* Professor Joan Ferrante, *Columbia University;* Professor Daniel Hoffman, *University of Pennsylvania;* Professor Bishop Hunt, *Princeton University;* Professor Barbara Smith, *University of Pennsylvania.*

HISTORY: Professor Richard D. Challener, *Princeton University;* Professor David M. Chalmers, *University of Florida;* Professor Paul A. Cohen, *Wellesley College;* Professor Jean Herskovits, *State University of New York at Purchase;* Professor Edward M. Peters, *University of Pennsylvania;* Professor Philip Pomper, *Wesleyan University;* Professor Donald G. Rohr, *Brown University.*

LINGUISTICS: Dr. Lynette Hirschman, *University of Pennsylvania;* Dr. Jacqueline S. Sachs, *University of Connecticut.*

MATHEMATICS: Professor Edward Hook, *Fordham University;* Professor Frank Spitzer, *Cornell University;* Professor Thann Ward, *University of Virginia.*

MODERN LANGUAGES

FRENCH: Professor Marcel Gutwirth, *Haverford College;* Professor Albert Sonnenfeld, *Princeton University.*

PHILOSOPHY: Professor John E. Atwell, *Temple University;* Professor Fred Feldman, *University of Massachusetts at Amherst;* Professor Allan Gotthelf, *Trenton State College;* Professor Theodore Mischel, *State University of New York at Binghamton;* Professor Thomas Nagel, *Princeton University;* Professor Thann Ward, *University of Virginia.*

PHYSICS: Dr. Henry Abarbanel, *National Accelerator Laboratory;* Professor David Park, *Williams College;* Professor Michael Reed, *Princeton University.*

POLITICAL SCIENCE: Professor Joel D. Aberbach, *University of Michigan;* Professor Robert J. Art, *Brandeis University;* Dr. Lucy C. Behrman, *Fels Center of Government;* Professor Roy F. Grow, *Brandeis University;* Professor Charles A. Miller, *Princeton University;* Professor Sheldon Wolin, *Princeton University.*

## VISITING EXAMINERS

PSYCHOLOGY: Professor Douglas Davis, *Haverford College;* Dr. Deborah Kemler, *University of Pennsylvania;* Professor Dennis Krebs, *Harvard University;* Dr. David Ogilvie, *Rutgers University at New Brunswick;* Professor David Ricks, *Psychological Center, New York;* Dr. Jacqueline S. Sachs, *University of Connecticut;* Professor Jill Wannemacher, *Bryn Mawr College;* Professor Jay Weiss, *Rockefeller University;* Professor Carl Zuckerman, *Brooklyn College.*

RELIGION: Professor Robert F. Evans, *University of Pennsylvania;* Professor Frank Reynolds, *The Divinity School, University of Chicago;* Dr. Gerhard Spiegler, *Temple University.*

SOCIOLOGY AND ANTHROPOLOGY: Professor Raymond Fogeslon, *University of Chicago;* Professor Robert F. Lyke, *Princeton University;* Professor Stanford Lyman, *New School for Social Research;* Professor Gilbert Rozman, *Princeton University.*

# DEGREES CONFERRED

June 3, 1974

## BACHELOR OF ARTS

Thomas Alexander Aleinikoff, *Political Science*
Sandra Jeane Alexander*, *Political Science*
Warren Morse Allen, *Biology*
Jonathan Leigh Altman, *Physics*
David Jonathan Apfel, *Philosophy*
Jeffrey Lawrence Apfelbaum, *Biology*
Heather Ann Argyle, *Biology*
Adam Steven Asch, *Biology*
Emily Louise Atkinson, *Art History*
Robin Goodhue Barber, *Biology*
Lisa Helene Barsky, *Psychology*
David Stuart Baskin, *Psychology*
James Michael Becker, *Economics*
Shelley Robin Bedell, *French*
Herbert Maitland Bedolfe, III, *Psychology*
Sherry Franchesca Bellamy†, *Political Science*
Caryn L. Bern, *Chemistry*
Lynn Ellen Bernstein§, *Psychology*
Mitchell Kent Black§, *Psychology*
Edwin Olen Blew§, *Psychology*
Alice Lane Bodley, *Political Science*
Joann Norma Bodurtha, *Biology*
Barbara Ellen Boehm*, *English Literature*
Rosanne Boldman, *Biology*
Gino Clement Bottino, *Biology*
Steven Alexander Bowers*, *Psychology*
Daniel Walter Brenner, *Biology*
Elizabeth Rose Sanders Bressoud, *Biology*
Henry Joseph Brodnicki, *Political Science*
Byron Frank Brown, *English Literature*
Jean Louise Brown, *Religion*
Joan Ellen Brown, *Psychology*
Susan Rebecca Brown, *Art History*
Katherine Forrest Bryant, *English Literature*
Armond David Budish, *Political Science*
Darryl C. Burke†§, *Psychology*
Babette Addona Burns, *Art History*

* As of the Class of 1973.
† With concentration in Black Studies.
§ Secondary School Teaching Certificate.

Rebecca Weld Bushnell, *English Literature*
Katherine Buttolph, *Russian*
Michael Chusid, *Russian*
Nancy Elizabeth Cinnater, *English Literature*
Jean-Marie Clarke, *Art History*
Kenneth Arthur Cohen, *Economics*
Michael Jon Cohen, *Biology*
William Claude Collins, *Political Science*
Jennifer Cook, *Art History*
Donald Edward Cooper, *Chemistry*
Jordan Lynne Cornog, *Religion*
Christina Crosby, *English Literature*
Andrew Loeb Dannenberg, *Biology*
Margaret Chiquita Davidson, *Religion*
David Hammeken Davis, *Biology*
Lynn Caywood Detwiler, *Physics*
Joanne Elizabeth Devlin, *History*
Mark Hamilton DeWitte*, *Psychology*
Carol Elizabeth Diggs, *Art History*
Michael Ellis Dudnick, *Psychology*
Charles Gerard Durand, *Biology*
Robert Eric Early, *Physics*
Deborah Rosen Edelman, *Biology*
Jacqueline Ladine Edmonds§, *Mathematics*
Catherine Anne Egli, *Psychology*
Kandace Einbeck§, *German*
Marion Kristine Emanuelson, *Sociology & Anthropology*
Shawn Sheldon Emory, *Economics*
Steven Allen Epstein, *History*
Jonathan Howard Erb, *History*
Lana Marie Everett, *Biology*
Stephen Reidar Fast, *Mathematics*
Anne Henderson Finucane, *Sociology & Anthropology*
Eileen Claire Finucane, *Philosophy*
Anna Rachelle Fisher, *English Literature*
Laurel Ruth Fisher, *Greek*
Henry Burch Floyd, *Biology*
William Cameron Forbes, *Economics*
Jeffrey Alexander Frankel, *Economics*
Christine Alice Frasch, *Psychology*
Eric Donald Gaver**, *Sociology & Anthropology*
Karen Lee Genkins, *Sociology & Anthropology*
Jeffrey Lee Gertler, *History*
Daniel Joyce Gibbon, *History*
Sam Peter Gidas, *Economics and Mathematics*
Alan Martin Glaseroff, *History*
Marc Ellis Goldberg, *Psychology*
Edmund Tayloe Gordon, *Sociology & Anthropology*
Wayne Frederick Gregg, *Psychology*
Randall Grometstein, *History*
Tiziano Guerra, *Spanish*
Maggie Habib* *Philosophy*
Marc Robert Halley, *Biology*
Theodore Bruce Hannon, *History*
Helen Victoria Haring§, *English Literature*
Mark Matthew Harmeling, *History*
William Wallace Harrington, Jr., *Biology*
Janet Carol Hart, *Sociology & Anthropology*
Elizabeth Ames Hastedt, *English Literature*
Louis David Heavenrich, *Psychology*
Patricia Marie Heidtmann, *Biology*
Klaus Heinrich Hein, *German*
Andrew A. Henderson, III, *Biology*
Neil Stuart Heskel, *Philosophy*
Samuel Huntington Hobbs, IV, *Spanish*
Carol Leslie Hogben, *Mathematics*
Roger C. Holstein, *English Literature*
David S. Hough*, *Mathematics*
Mark Charles Hoyer, *Biology*
David Peter Hoyt, *Economics*
John F. Humphrie, Jr.§, *Sociology & Anthropology*

** As of the Class of 1972.
* As of the Class of 1973.
§ Secondary School Teaching Certificate.

Lynette Diane Hunkins†, *Sociology & Anthropology*
Deborah Gregg Hunt, *Psychology*
Frank Charles Huntington, *History*
Joanna Starr Hynes, *History*
Keiko Itoh, *History*
Mark David Jackson, *Mathematics and Psychology*
Peter Barnes Jaquette, *Economics*
Cynthia Ann Jetter†§, *Sociology & Anthropology*
Deborah Lorraine Johnson, *Political Science*
Charles Pownall Jones, *History*
Jacqueline Denise Jones†, *Psychology*
George Demetrios Karis, *Psychology*
Claudia Helen Kawas, *Psychology*
Richard Alan Keiter§, *Economics*
Richard Andrew King, *Political Science*
William Astor Kirk†, *Political Science*
Donna May Kirshbaum, *Greek*
Deborah Jane Kogan, *Sociology & Anthropology*
Karen Kohlberg, *Russian and Psychology*
Susan Koran, *History*
Nina Julia Kraus, *Psychology*
Robert Neil Kravitz, *History*
Sherman Lewis Kreiner§, *Sociology & Anthropology and Political Science*
Jean Lorraine Kristeller, *Psychology*
Uma Kuchibhotla, *Spanish*
Nell Brockenbrough Lancaster, *Philosophy*
Katherine Penney Lane, *Biology*
Anne Talcott Lawrence, *Sociology & Anthropology*
Stephen Girard Lax, Jr., *Psychology*
Keith Baylor Layton, *Political Science-International Relations*
Michael Joseph Leja, *Art History*
Debra Rachel Levin, *History*
Donata Celeste Lewandowski, *Chemistry*
Veechwin Li, *Economics*
Laura Crowell Lieberman§, *English Literature*
Margaret Ann Linton, *Psychology*
Jennifer Anne Lippincott, *Psychology*
Robert Mather Lippincott, *English Literature*
Irina Livezeanu, *Greek*
Christopher Wickliffe Lowery, *Psychology*
Thomas Fenton Luce, Jr., *Economics*
Catherine Anne Lutz, *Sociology & Anthropology*
Susan Carol Maerki, *Biology*
Donna Magda§ *Mathematics*
David Bruce Mallott, *Biology*
Michael Brooks Martin, *Biology*
Jeffrey Hal Massien*, *Economics*
Frances Masterson, *Art History*
Rachel Mausner, *Biology*
Gerald McKenzie, *Economics*
Peter Brett McKinney, *Political Science*
Robert Eastburn McVaugh, *Special Major,*
Rodney Morris Mebane, *Political Science*
Christiaan Philip Melson, *Psychology*
Josephine Anne-Marie Merena, *Russian*
Margaret Buist Merrill, *Russian*
Crispin Mount Miller, *Biology*
Jean Madeleine Millican, *Chemistry*
Carolyn Cecelia Mitchell†§, *Sociology & Anthropology*
Sandra Lynn Moon, *Economics and Psychology*
Alberto Jose Mora, *English Literature*
John Robert Morken, *Mathematics*
William Gustav Mueller, *History and Political Science-International Relations*
Ronda Lou Muir* *Psychology*

* As of the Class of 1973.
§ Secondary School Teaching Certificate.
† With concentration in Black Studies.

Susheela Moreshwar Nadkarni, *French*
Thomas William Nash, *Biology*
Deborah Neale, *French*
Christopher Martin Niemczewski, *Art History and Economics*
Donatus Chukwubueze Ohanehi, *Mathematics*
William Edward Olen*, *Psychology*
Cady Stanton Olney, *English Literature*
Richard Matthew Osterweil, *Political Science*
Robert Frank Owen, *Economics*
Jane Martia Packard, *Psychology*
Janis Hoyt Palmer, *Sociology & Anthropology*
Michelle Margaret Palmer, *Biology*
Patricia Jean Peters, *Biology*
Pamela Irene Pittenger, *Sociology & Anthropology*
Lois Ann Polatnick, *Biology*
Edward Louis Polochick, *Music*
Glenn Edwin Porter*, *Psychology*
Samuel James Powell†, *Psychology*
Cornelia Punj*, *Art History*
Kevin Francis Quigley, *English Literature*
Helen Edwards Rayner, *French*
Michael F. Redfield, *Art History*
Drew Dee Reynolds, *Political Science*
Katharina Elizabeth Robeck, *Biology*
Donald Roberson, *Political Science*
Paul Davis Roose, *History*
Leonard David Roseman, *Physics*
Richard Allen Rudnick, *Political Science*
Barbara Janet Rudolph*, *Psychology*
Shalom Saar§, *Economics and Psychology*
Shelley Ann Sackett§, *Psychology*
Cheryl Jeanne Sanders†, *Mathematics*
Margaret Luise Sanner§, *History*
David Hendry Sawyer, *History*
William Jay Schmiedel, *Religion*
Johanna Marie Schmitt, *Biology*
Jonathan Bernard Schwartz, *Philosophy*
Donald Eugene Selby, Jr., *English Literature*
David Marvin Shavin, *Philosophy*
Stephen Patrick Shea, *English Literature*
Bonnie Yochelson Shechtman, *History*
David Shechtman, *Economics*
James Grattan Sheehan, *Economics and English Literature*
David Samuel Shucker, *Mathematics*
Betsy Sue Simson, *French*
Paula Skallerup, *English Literature*
Richard Charles Slawsky*, *Psychology*
Laura Penney Smith§, *English Literature*
Robert Henry Smith, Jr., *Mathematics*
James Herbert Spigel, *Biology*
George Isaac Stanley†, *Sociology & Anthropology*
Lawrence Christopher Stedman, *Psychology*
Rosemary LaRue Steel***, *English Literature*
John Louis Stenger, *Special Major*
Hugh Scott Stephenson*, *Psychology*
George William Stevens, *Physics*
Lydia Florence Stoiadin, *English Literature*
Catherine Cake Stone, *Psychology*
Kristine Brigitte Strateff*, *Psychology*
Jeffrey Fetterhoof Swigart, *Political Science*
Joseph Shigehiro Takahashi, *Biology*
Kin On Tam, *Mathematics*
Alan Tawil, *Economics*
Samuel Osgood Taylor, *Chemistry*
Davia Beth Temin, *Art History*
Vaneese Yseult Thomas†§, *French*
Marjorie Jean Thompson, *Special Major*

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David Newton Thurber**, *Psychology*
Harold Wayne Trammel, *Religion*
Elizabeth Nieves Traversi, *Spanish*
Matthew Ira Ullman, *Psychology*
Marya Christina Ursin**, *Art History*
Johannes Andreas Valentin, *Art History*
Donald Jason Venes, *English Literature*
Frances Vilella-Velez, *Biology and Spanish*
Margaret Ann Vogt, *Religion*
David Allen Vorhis, *Philosophy*
Diane Patrice Washington§, *French*
Laura Stewart Welch, *Biology*
Karellynne Wertheimer, *English Literature*
John Whyte, *Biology*
Earle Rolfe Williams, *Physics*
Ernest Wallace Williams, Jr., *History*
Scheryl Eugenia Williams†, *Political Science-International Relations*
Paul Guy Winer, *Philosophy*
Edward Leslie Winpenny, *English Literature*
Mary Wood, *Art History*
Martin Briner Woods, *History*
Jon Morrison Young, *English Literature*
Catherine Yuen, *Physics*
Martha Alice Ziebur, *Biology*
George Martin Zinkhan, *English Literature*

## BACHELOR OF SCIENCE

Peter George Colin, *Engineering*
Azim Alibhai Velji Dosani, *Engineering*
John Hrihory Dydiw, *Engineering*
William Cameron Forbes, *Engineering*
Tiziano Guerra, *Engineering*
Klaus Heinrich Hein, *Engineering*
Chong Kuan Koh, *Engineering*
Chikwado Sunday Nwosu, *Engineering*
Donatus Chukwubueze Ohanehi, *Engineering*
Donald Roberson, *Engineering*
Stephen Patrick Shea, *Engineering*
Ray Luther Steinmetz, *Engineering*
Spyros Nicou Stephanou, *Engineering*
Harold Wayne Trammel, *Engineering*
Stacey Harrison Widdicombe, *Engineering*
Stephen Robert Zimmerman, *Engineering*

## HONORARY DEGREES

Eleanor Flexner

DOCTOR OF HUMANE LETTERS

Richard Wall Lyman
Andrew J. Young, Jr.

DOCTOR OF LAWS

** As of the Class of 1972.
§ Secondary School Teaching Certificate.
† With concentration in Black Studies.

# AWARDS AND DISTINCTIONS

## HONORS AWARDED BY THE VISITING EXAMINERS

HIGHEST HONORS:

T. Alexander Aleinikoff, C. Leslie Hogben, Karellynne Wertheimer.

HIGH HONORS:

David Baskin, Christina Crosby, Lynn Detwiler, Steven Epstein, W. Cameron Forbes, Jeffrey Frankel, Patricia Heidtmann, Frank Huntington, Charles Jones, Richard Osterweil, Jonathan Schwartz, David Shechtman, David Shucker, Earle Williams.

HONORS:

James Becker, Katherine Bryant, Armond Budish, Nancy Cinnater, Donald Cooper, Marion Emanuelson, David Hoyt, Deborah Hunt, Peter Jaquette, Deborah Johnson, Claudia Kawas, Robert Kravitz, Jennifer Lippincott, M. Brooks Martin, Alberto Mora, John Morken, Cady Olney, Robert Owen, Janis Palmer, Kevin Quigley, Drew Reynolds, Paul Roose, Leonard Roseman, Bonnie Shechtman, Paula Skallerup, Lydia Stoiadin, Jeffrey Swigart, Kin On Tam, Davia Beth Temin, David Vorhis, Catherine Yuen.

## DISTINCTION IN COURSE AWARDED BY FACULTY

Heather Ann Argyle, Robin Goodhue Barber, Lisa Helene Barsky, Daniel Walter Brenner, Rebecca Weld Bushnell, Michael Chusid, Andrew Loeb Dannenberg, Azim Alibhai Velji Dosani, Michael Ellis Dudnick, Charles Gerard Durand, Catherine Anne Egli, Sam Peter Gidas, Tiziano Guerra, Klaus Heinrich Hein, Neil Stuart Heskel, Roger C. Holstein, Mark David Jackson, Deborah Jane Kogan, Nina Julia Kraus, Sherman Lewis Kreiner, Jean Lorraine Kristeller, Anne Talcott Lawrence, Michael Joseph Leja, Irina Livezeanu, Thomas Fenton Luce, Jr., Catherine Anne Lutz, Rachel Mausner, Robert Eastburn McVaugh, Margaret Buist Merrill, Ronda Lou Muir, Thomas William Nash, Jane Martia Packard, Lois Ann Polatnick, Johanna Marie Schmitt, Donald Eugene Selby, Jr., James Grattan Sheehan, Laura Penney Smith, Robert Henry Smith, Jr., Lawrence Christopher Stedman, Ray Luther Steinmetz, Marjorie Jean Thompson, Matthew Ira Ullman, Frances Vilella-Velez, Margaret Ann Vogt, Jon Morrison Young, Martha Alice Ziebur.

## ELECTIONS TO HONORARY SOCIETIES

PHI BETA KAPPA:

Thomas Alexander Aleinikoff, Lisa Helene Barsky, David Stuart Baskin, Daniel Walter Brenner, Rebecca Weld Bushnell, Michael Chusid, Donald Edward Cooper, Christina Crosby, Andrew Loeb Dannenberg, Lynn Caywood Detwiler, Azim Alibhai Velji Dosani, Michael Ellis Dudnick, Charles Gerard Durand, Steven Allen Epstein, Jeffrey Alexander Frankel, Sam Peter Gidas, Patricia Marie Heidtmann, Klaus Heinrich Hein, Neil Stuart Heskel, Carol Leslie Hogben, Frank Charles Huntington, Mark David Jackson, Charles Pownall Jones, Deborah Jane Kogan, Anne Talcott Lawrence, Irina Livezeanu, Catherine Anne Lutz, Rachel Mausner, Margaret Buist Merrill, Thomas William Nash, Richard Matthew Osterweil, Jonathan

Bernard Schwartz, David Samuel Shucker, Laura Penney Smith, Robert Henry Smith, Jr., Kin On Tam, Marjorie Jean Thompson, Margaret Ann Vogt, Karellynne Wertheimer, John Whyte, Earle Rolfe Williams.

SIGMA XI:

Jeffrey L. Apfelbaum, Adam S. Asch, David S. Baskin, Caryn L. Bern, Donald E. Cooper, David H. Davis, Lynn C. Detwiler, Azim A. Dosani, Patricia M. Heidtmann, Klaus H. Hein, Carol L. Hogben, Mark D. Jackson, Katherine P. Lane, Michael B. Martin, Thomas W. Nash, Leonard D. Roseman, David S. Shucker, Robert H. Smith, Jr., Lawrence C. Stedman, Ray L. Steinmetz, Spyros N. Stephanou, Kin O. Tam, Earle R. Williams, Catherine Yuen.

TAU BETA PI:

Azim A. Dosani, William C. Forbes, Klaus H. Hein, Ray L. Steinmetz, Stephen R. Zimmermann.

## SWARTHMORE COLLEGE FELLOWSHIP AWARDS

*The Phi Beta Kappa Fellowship to* Daniel Walter Brenner.
*The Hannah A. Leedom Fellowship to* Michael Chusid, Patricia Marie Heidtmann, Ann D. Lindsay, James Grattan Sheehan.
*The Joshua Lippincott Fellowship to* Deborah Rosen Edelman, Andrew A. Henderson, III.
*The John Lockwood Memorial Fellowship to* Christopher Leinberger.
*The Lucretia Mott Fellowship to* Joann Norma Bodurtha.
*The Martha E. Tyson Fellowship to* Lynn Ellen Bernstein.

## SPECIAL AWARDS

*The Ivy Award to* Thomas Alexander Aleinikoff.
*The Oak Leaf Award to* Joann Norma Bodurtha.
*The McCabe Engineering Award to* Klaus H. Hein.
*The Sarah Kaighn Cooper Scholarship to* James Snipes.
*The Brand Blanshard Prize to* Jonathan Schwartz.
*The A. Edward Newton Library Prize to* Deborah Kogan and Wallace Harrington, Jr.
*The Lois Morrell Poetry Prize to* Daniel W. Brenner.
*The John Russell Hayes Poetry Prize to* Kevin Quigley.
*The Academy of American Poets Award to* Daniel W. Brenner.
*The May E. Parry Memorial Award to* Jean Brown and Jordan L. Cornog.
*The Scott Award to* Saul Rubinstein.
*The Arthur Hoyt Scott Garden and Horticultural Award to* Dr. George S. Avery.

## ENROLLMENT OF STUDENTS BY CLASSES 1973-74

| | MEN | WOMEN | TOTAL |
|---|---|---|---|
| Seniors | 156 | 123 | 279 |
| Juniors | 138 | 97 | 235 |
| Sophomores | 179 | 154 | 333 |
| Freshmen | 178 | 164 | 342 |
| | 651 | 538 | 1189 |
| Graduate Students | 2 | 1 | 3 |
| Special Students | 5 | 11 | 16 |
| TOTALS | 658 | 550 | 1208 |

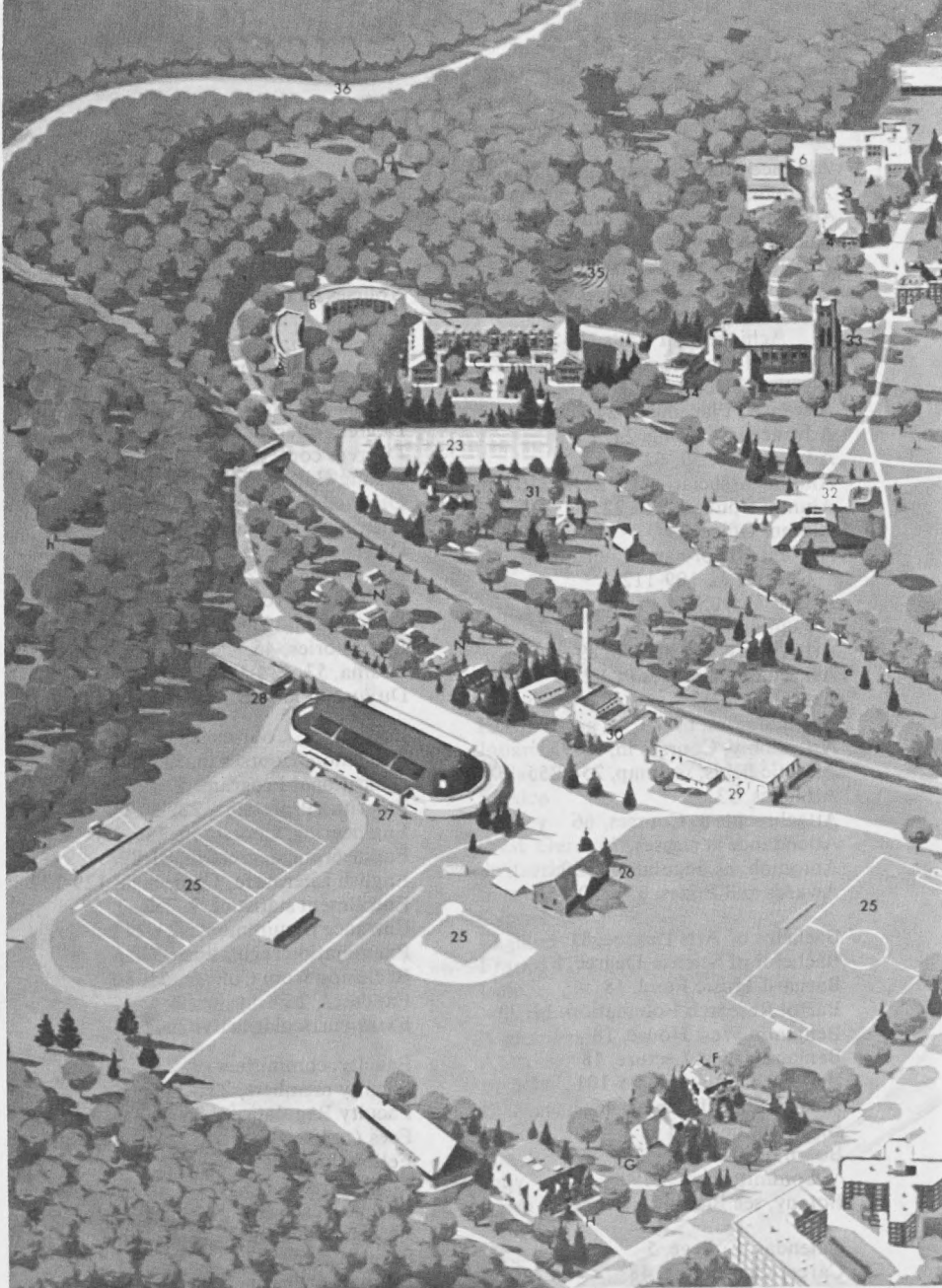
## GEOGRAPHICAL DISTRIBUTION of students 1973-74

| | |
|---|---|
| Pennsylvania | 237 |
| New York | 203 |
| New Jersey | 125 |
| Maryland | 73 |
| Massachusetts | 54 |
| California | 48 |
| Connecticut | 45 |
| Virginia | 39 |
| Delaware | 32 |
| Ohio | 31 |
| Illinois | 28 |
| Florida | 19 |
| District of Columbia | 15 |
| Michigan | 15 |
| North Carolina | 14 |
| Kentucky | 12 |
| Texas | 12 |
| Georgia | 10 |
| Minnesota | 10 |
| Missouri | 10 |
| New Hampshire | 10 |
| Indiana | 8 |
| Vermont | 8 |
| Colorado | 7 |
| Iowa | 6 |
| South Carolina | 5 |
| Tennessee | 5 |
| West Virginia | 5 |
| Alabama | 4 |
| Nebraska | 4 |
| Puerto Rico | 4 |
| Rhode Island | 4 |
| Washington | 4 |
| Wisconsin | 4 |
| Hawaii | 3 |
| Louisiana | 3 |
| Maine | 3 |
| Oregon | 3 |
| Wyoming | 3 |
| Alaska | 2 |
| Kansas | 2 |
| New Mexico | 2 |
| Arizona | 1 |
| Canal Zone | 1 |
| Mississippi | 1 |
| Total USA | 1134 |
| Canada | 11 |
| Hong Kong | 8 |
| Japan | 6 |
| Malaysia | 6 |
| Mexico | 5 |
| Turkey | 4 |
| West Germany | 4 |
| Switzerland | 3 |
| Bermuda | 2 |
| Cyprus | 2 |
| England | 2 |
| France | 2 |
| Iran | 2 |
| Nigeria | 2 |
| Afghanistan | 1 |
| Austria | 1 |
| Brazil | 1 |
| El Salvador | 1 |
| India | 1 |
| Israel | 1 |
| Italy | 1 |
| Ivory Coast | 1 |
| Kenya | 1 |
| Netherlands | 1 |
| Panama | 1 |
| Philippines | 1 |
| Taiwan | 1 |
| Tanzania | 1 |
| Trinidad | 1 |
| Total from abroad | 74 |
| Grand Total | 1208 |

# INDEX



*(Continued on page 256)*




# Swarthmore College Campus


## Key to the Map

1. Parrish Hall and Annex
2. Admissions Office
3. Scott Foundation Building
   (Relief Map of Campus)
4. Hall Gymnasium
5. Sharples Swimming Pool
6. Lang Music Building
7. Martin Biological Laboratory and
   Animal Laboratory
8. Du Pont Science Building
9. Beardsley Hall
10. Hicks Hall
11. Trotter Hall
12. Arts Center
    Pearson Theatre
    Wilcox Gallery
13. Bartol Research Center of the Franklin
    Institute
14. Friends Meeting House
15. Whittier House
16. Scott Horticultural Foundation Office
    a. Lilac collection
    b. Peony collection
    c. Magnolias
    d. Crabapples
    e. Pinetum
    f. Rhododendrons and azaleas
    g. Dean Bond Rose Garden
    h. Scott Foundation Nursery and
       test plots
17. McCabe Library
18. Tarble Social Center
19. Worth Health Center
20. Benjamin West House
21. Bond Memorial and Lodges
22. Robinson House—Black Cultural Center
23. Tennis Courts
24. Cunningham Field
25. Clothier Fields
26. Barn
27. Lamb-Miller Field House
28. Squash Courts
29. Service Building
30. Heating Plant
31. Fraternity Lodges
32. Sharples Dining Hall
33. Clothier Memorial
34. Sproul Observatory
35. Scott Outdoor Auditorium
36. Crum Creek

### Dormitories and Residences

A. Dana Dormitory
B. Hallowell Dormitory
C. Wharton Hall
D. Willetts Dormitory
E. Worth Dormitory
F. Palmer Hall
G. Pittenger Hall
H. Roberts Hall
J. Mary Lyon Buildings
K. Ashton House
L. Woolman House
M. Professors' Houses
N. Employees' Houses
O. Cunningham House
P. President's House