Graduate School
Graduate School
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OFFICERS
Richard Armitage, Dean
Office: Graduate School, 164 West 19th Avenue

Elmer Baumer, Associate Dean
Office: Graduate School, 164 West 19th Avenue

William M. Protheroe, Associate Dean
Office: Graduate School, 164 West 19th Avenue

Robert F. Miller, Assistant Dean and Secretary
Office: Graduate School, 164 West 19th Avenue

THE GRADUATE COUNCIL

Area 1
Ronald C. Bouncus, 1 year
Joseph T. Crymes, 2 years
W. Arthur Cullman, 3 years
Thomas J. Burns, Alternate, 3 years
Orlando C. Behling, Alternate, 2 years
Herbert F. Livingston, Alternate, 1 year

Area 2
Kenneth Reisch, 1 year
Edward Naber, 2 years
Glenn O. Schwab, 3 years
W. James Harper, Alternate, 2 years
Louis A. Swiger, Alternate, 2 years
Ruth E. Deacon, Alternate, 1 year

Area 3
Richard Hoppin, 1 year
Glenn Patton, 2 years
Henry Cady, 3 years
James Baughman, Alternate, 3 years
John Morrow, Alternate, 2 years
Eugene Friley, Alternate, 1 year

Area 4
Emanuel D. Rudolph, 1 year
Henry L. Plaine, 2 years
John A. Schmitt, Jr., 3 years
Verl L. House, Alternate, 3 years
Robert M. Pfister, Alternate, 2 years
David G. McConnell, Alternate, 1 year

Area 5
Arliss Rosden, 1 year
Robert E. Taylor, 2 years
Robert Howe, 3 years
Chalmers G. Hixson, Alternate, 3 years
Bruce L. Bennett, Alternate, 2 years
Charles Huelsman, Alternate, 1 year

Area 6
Marlin Thurston, 1 year
Arthur W. Leisig, 2 years
Albert B. Bishop, 3 years
Christie J. Geankoplis, Alternate, 3 years
Charles McLarman, Alternate, 2 years
Odus R. Burggraf, Alternate, 1 year

Area 7
Robert Bremner, 1 year
Oskar Seidlin, 2 years
Martin Stevens, 3 years
Bernard Barmann, Alternate, 3 years
Charles Fillmore, Alternate, 2 years
Frank Silbajoris, Alternate, 1 year

Area 8
Richard Nelson, 1 year
Hans Zassenhaus, 2 years
Eugene R. Capriotti, 3 years
Wayne Pettyjohn, Alternate, 3 years
Ivan Mueller, Alternate, 2 years
Richard M. Hill, Alternate, 1 year

Area 9
Thomas Powers, 1 year
Henry G. Cramblett, 2 years
Jules Lapidus, 3 years
Harold H. Wolf, Alternate, 3 years
Robert E. Ober, Alternate, 2 years
Louis Malpeel, Alternate, 1 year

Area 10
Herbert Farnes, 1 year
George G. Thompson, 2 years
Saad Z. Nagi, 3 years
Wallace Fotheringham, Alternate, 3 years
Edgar T. Shaudys, Alternate, 2 years
Thomas A. Flinn, Alternate, 1 year

GENERAL INFORMATION

The Ohio State University is situated approximately two and one-half miles north of the center of the City of Columbus, the capital of Ohio, a city of 552,063 persons. The Main Campus includes two geographical sections: the east campus, which is situated west of High Street and east of the Olentangy River between King and Lane Avenues; and the west campus, located west of the Olentangy River and east...
of North Star Avenue. Public transportation between the campus and the downtown area is available both on High Street and Neil Avenue. Port Columbus International Airport is readily accessible to the campus and by public transportation.

The University is supported by appropriations from the State government; by student fees and research grants; by gifts from alumni, industry, and friends; by federal assistance; and by a small endowment. Land used by the University in the Columbus area (both owned and leased) totals 3,290 acres, with 1,671 acres on the campuses (526 on the east campus and 1,145 on the west campus), 295 acres in the golf courses, and 1,325 acres at Don Scott Field. The Don Scott Field area contains a 245-acre airport and 1,080 acres of experimental and demonstration farms and research areas. The west campus acreage consists mostly of land used for agricultural administration, research, and teaching.

The total value of the land, buildings, and equipment of the University is currently $278,618,568.

The University operates a radio and television station (WOSU), dedicated to the education of the citizens of Ohio, and a student daily newspaper (The Lantern) that serves the University community.

Effective January 1, 1968, the University organization established the Graduate School and 16 colleges, each under the administration of a dean and college faculty, as follows: the Colleges of the Arts and Sciences composed of the Colleges of The Arts, Biological Sciences, Humanities, Mathematics and Physical Sciences, and Social and Behavioral Sciences; the undergraduate professional colleges of Administrative Science, Agriculture and Home Economics, Education, Engineering, and Pharmacy; the graduate professional Colleges of Dentistry, Law, Medicine, Optometry, and Veterinary Medicine; and the University College.

The University academic year is divided into four quarters — Summer, Autumn, Winter, and Spring. Each of these quarters comprises approximately 11 weeks. The work of the Autumn Quarter is completed before the Christmas recess, which forms a natural break in academic activity before the start of the Winter Quarter. The spring vacation constitutes a full week between the Winter and Spring Quarters. By attending the Summer Quarter regularly, in addition to the other three quarters, many graduate students are able to accelerate completion of degree programs.

The Summer Quarter is divided into two equal terms of approximately six weeks each for the convenience of teachers and others who cannot attend the full quarter. Various departments offer a number of courses that may be completed in a single term.

**ORGANIZATION**

The instruction and training of graduate students has been one of the functions of the University since 1878, the year when the first graduate student was in residence.

For several years, the graduate work of the University was unorganized, and each department conducted its own work with little reference to other departments. After the University was divided into colleges, however, each college controlled the graduate work offered in various departments constituting that college. By 1902, graduate work in the College of Arts had assumed sufficient proportions to warrant the organization of a Graduate School to secure an effective and systematic arrangement of the graduate work of the college. In 1911, a Graduate School was organized so that the University could administer all graduate work offered in the several departments of the University.

The Graduate School today is under the administration of a Graduate Council consisting of 30 members. Under the chairmanship of the Dean, the membership of the Council is composed of three elected regular members of the Graduate Faculty from each of these ten areas:

1. Administrative sciences
2. Agricultural sciences
3. The arts
4. Biological sciences
5. Education
6. Engineering sciences
7. Humanities
8. Physical sciences and mathematics
9. Professional biological sciences
10. Social and behavioral sciences

The Dean of the Graduate School, in collaboration with the Graduate Council, exercises overall review and supervision of
graduate programs and provides leadership both in developing new programs and improving standards for existing programs. A Council of Graduate Students was established in 1955 to promote and maintain the academic and general welfare of graduate students. The Council is composed of representatives elected from the subject-matter areas corresponding to the ten areas of the Graduate Council. Meetings of the Council of Graduate Students are held regularly during the year. Social functions are sponsored each quarter. Graduate students may obtain information about the Council and its activities in the Graduate School Office.

Many departments of instruction have organized graduate clubs. Students wishing to affiliate with one of these clubs should consult the chairman of the department.

DEGREES CONFERRED THROUGH THE GRADUATE SCHOOL

For degrees offered in the various fields of knowledge and specific requirements for designated master's and doctoral degrees, refer to the particular program of interest. General requirements for the master's degree are set forth on page 24, and those for the degree Doctor of Philosophy may be found on page 35.

PREPARATION FOR COLLEGE TEACHING

Preparation for a career in college teaching is a basic aspect of graduate education at Ohio State. Most departments offering work leading to graduate degrees provide opportunity for graduate students to obtain specific training in college teaching. Students usually teach survey or introductory undergraduate courses, assist in laboratory courses, or assist in research projects related to teaching. Many departments conduct informal training sessions for their teaching assistants or designate a faculty member to supervise the activities of their assistants.

To acquaint graduate students with the varied and complex problems of college teaching, the Graduate School offers the course College Teaching 801.

OFF-CAMPUS GRADUATE CENTERS

THE DAYTON GRADUATE CENTER

Since 1946, The Ohio State University has offered graduate and advanced undergradu-
Both full-time and part-time students are admitted. Application is made in the same manner as for all other students. A student may complete five quarters of credits in Cincinnati but must complete the sixth quarter at the Columbus campus. Fees are assessed at the same rate as those of students attending the main campus.

For more complete information, write the Director of the School of Social Work, The Ohio State University, or the Coordinator of the Cincinnati Graduate Center, 206 College of Education Building, University of Cincinnati.

AGREEMENTS WITH OTHER INSTITUTIONS

CIC TRAVELING SCHOLAR PROGRAM

Graduate students at The Ohio State University are eligible to apply for admission to a "Traveling Scholar Program," sponsored by eleven Midwestern universities through the Committee on Institutional Cooperation (CIC). Holding membership on CIC are the University of Chicago, University of Illinois, Indiana University, University of Iowa, University of Michigan, Michigan State University, University of Minnesota, Northwestern University, The Ohio State University, Purdue University, and the University of Wisconsin.

The CIC program enables selected graduate students to take advantage of unique facilities on the campus of another participating university. Such facilities include special course offerings, research opportunities, laboratories, and library collections. Students participating in this program, known as "CIC Traveling Scholars," will be limited to one semester or two quarters on another campus.

A student wishing to become a CIC Traveling Scholar from The Ohio State University first must be recommended by his own graduate adviser, who will approach an appropriate faculty member at the proposed host institution in regard to a visiting arrangement. After agreement by the student's adviser and the faculty member at the host institution, graduate deans at both institutions will be fully informed by the adviser and have the power to approve or disapprove.

A CIC Traveling Scholar from The Ohio State University will be registered on this campus, and his fees will be collected and kept by this institution. No additional fees will be charged traveling scholars. Credit for the work taken elsewhere under this program will be accepted at this university.

A graduate student interested in this program should note that the first step in applying for work under this arrangement is to obtain approval of his graduate adviser. Following such approval he should contact the Dean of the Graduate School of The Ohio State University to complete arrangements.

OTHER COOPERATIVE PROGRAMS

In order that certain educational and research institutions may be able to take advantage of the facilities of the Graduate School, and also in order that these institutions may be utilized for the pursuit of research work in connection with the Graduate School, agreements have been made between the Board of Trustees of The Ohio State University and the following institutions.

MIAMI UNIVERSITY

Under this program, up to one-half of the doctoral credit-hour requirements beyond the master's degree may be fulfilled by credits earned in approved courses and in approved research at Miami University. Coursework completed at Miami University may be accepted in fulfillment of specific course requirements fixed by The Ohio State University. Residence at Miami University may be given consideration in fulfillment of The Ohio State University requirements concerning terms of residence. A student may perform his research and preparation of a dissertation under the supervision of either a member of the faculty of The Ohio State University or under supervisors from both universities. The student will have an academic adviser at Miami University as well as one at The Ohio State University. The committee for the student's general examination will include at least one member of the Miami University faculty. The committee for the student's final examination and defense of his dissertation will also include at least one member of the Miami University faculty. Upon fulfillment of all requirements, a student enrolled in this program will receive the degree Doctor of Philosophy from The Ohio State University "in cooperation with Miami University."
Students in the cooperative program are eligible for appointments to graduate fellowships or graduate assistantships at either university.

This program is available only in those fields where the corresponding departments of the two universities have established an agreement of cooperation which has been approved by the Joint Committee on Ph.D. Cooperation. For further information, write to the Dean of the Graduate School, Miami University, Oxford, Ohio 45056.

THE MERRILL-PALMER SCHOOL

A graduate of the University who has completed all the necessary undergraduate requirements may fulfill the residence requirements for the master's degree by satisfactorily completing one quarter of acceptable work in residence at the University and two additional quarters of acceptable work in residence at the Merrill-Palmer School in Detroit. Before entering the Merrill-Palmer School, the candidate must confer with the chairman of the department at the University in which he wishes to specialize, under whose direction a general course of study for the master's degree will be arranged. The thesis subject must be of such character as to enable the candidate to carry on experimental work at the Merrill-Palmer School.

The final examination of the candidate will be conducted by a committee consisting of members of the instructional staff of this university, together with representatives of the Merrill-Palmer School, according to the rules governing the master's degree. The thesis must meet with the approval of both the Merrill-Palmer School and this university.

Students carrying on work at the Merrill-Palmer School under the above regulations must also register at the same time in the Graduate School of this university but will not be required to pay fees in this university.

THE PERKINS OBSERVATORY

The Perkins Observatory is jointly maintained and administered by Ohio State and Ohio Wesleyan Universities. Its facilities, including a 32-inch reflecting telescope, a 16-inch Schmidt telescope, and auxiliary equipment for spectrographic and photometric research, are available for students registered in the Graduate School desiring to pursue research work in astronomy and astrophysics.

In addition, the Perkins 69-inch telescope, sixth largest in the United States, is located near Flagstaff, Arizona in collaboration with the Lowell Observatory, and may be used for advanced research problems. Research facilities in Radio Astronomy, including the 360-foot radio telescope at the Perkins Observatory, are also available, in collaboration with the Department of Electrical Engineering.

THE JUVENILE DIAGNOSTIC CENTER OF THE STATE OF OHIO

Students who are registered in the Graduate School and who are candidates for the master's degree, specializing in clinical psychology, may complete as much as one-third of the work required for this degree at the Juvenile Diagnostic Center. All such work must be approved in advance by a professional member of the clinical division of the Department of Psychology, and all credits received for such work must be submitted under his signature.

Candidates for the degree Doctor of Philosophy, specializing in clinical psychology, may likewise carry on work at the Juvenile Diagnostic Center. The amount of such work shall be determined in each individual case by a professional member of the Division of Clinical Psychology of the Department of Psychology and the Dean of the Graduate School, but in no case will this amount exceed one-third of the total requirements for the degree Doctor of Philosophy.

THE BATTELLE MEMORIAL INSTITUTE

Students who are registered in the Graduate School, specializing in certain fields of engineering, especially in metallurgy, fuels, and allied fields, may carry on their research work at the Battelle Memorial Institute with permission of the department concerned. The credit for such work must be submitted under the signature of the professor in charge of the work, who must be a member of the appropriate department of the University.

THE KETTERING RESEARCH FOUNDATION

The Ohio State University has entered into an agreement with the Kettering Research Foundation at Antioch College which makes it possible for candidates for the
Ph.D. degree to carry out the research work essential for a dissertation at the Kettering Foundation. This work must be done under the general direction of the appropriate department in the University.

The research work of the Kettering Foundation is directed largely to a study of chlorophyll and photosynthesis. Excellent opportunities are offered to those interested in these and related fields of biophysics, biochemistry, and plant physiology. Ample facilities and a competent scientific staff are available. A program of research, when leading to a dissertation, must meet both the requirements and the standards of the University and the Kettering Foundation.

Students may obtain as much as two years of residence for research carried out at the Kettering Research Foundation. They must, however, register simultaneously in the Graduate School. During this period they are exempt from all fees except the registration fee of $15 and the graduation fee when the degree is received. At least one year of full-time residence must be spent at the University doing the coursework necessary for the Ph.D. degree. During this year of residence, the regular incidental, laboratory, and tuition fees must be paid, and the candidate must meet all the requirements for the Ph.D. degree as established by The Ohio State University.

THE SAMUEL S. FELS INSTITUTE

A cooperative agreement between the Graduate School of the University and the Samuel S. Fels Institute for the Study of Prenatal and Postnatal Environment at Antioch College permits graduate students to complete their theses or dissertations at the Fels Institute.

The Fels Institute is engaged in an important investigation of the environment and hereditary factors controlling child development. Many research projects are under way.

Students may earn one year of residence toward the Ph.D. degree (45 quarter hours) or 15 quarter hours toward the master’s degree while carrying on research at Fels Institute. They must register in the Graduate School while completing this work. During this period they must pay the usual fees.

Students registering under this plan must obtain the approval of the Department of Psychology and must meet all the requirements for the master’s or the Ph.D. degrees established by the University.

THE UNIVERSITY LIBRARIES

The University Libraries include the Main Library (William O. Thompson Memorial) and 25 department libraries. The latter are smaller libraries specializing in particular subjects or groups of related subjects, such as agriculture, botany and zoology, commerce, education, geology, music, and physics. The Main Library contains general books and periodicals, the collections pertaining to many of the disciplines of the social sciences and to most of the disciplines of the humanities, the rare book collection, and older works in all fields represented at the University.

Special reading rooms in the Main Library are organized for graduate study and research in English and speech; history, philosophy, and political science; foreign languages; and fine arts. Maps and atlases are also provided in the Main Library.

In all, the University Libraries contain over 2,140,000 volumes. Titles in all of the University Libraries on the Columbus campus are recorded in the public card catalog in the Main Library; the catalogs in the department libraries include only titles in the separate libraries. The Reference Department, located on the first floor of the Main Library, provides professional assistance and houses an excellent collection of basic and specialized reference works. Graduate students and faculty are encouraged to confer with the Consultant for Library Research and Lecturer in Subject Bibliography for advice on bibliographic sources for theses, dissertations, and research projects. The consultant is also available for lectures to advanced classes and seminars. Interlibrary loan service is provided by the Circulation Department.

Any person is privileged to use the University Libraries for reference, but books may be drawn for home use only by the faculty, staff, and registered students of the University. Graduate students, faculty, and undergraduates in honors programs may use the stacks of the libraries upon presentation of their fee cards or other identification at the main circulation desk.

The University Libraries have been organized and maintained for the primary purpose of providing books and services
necessary for the instruction and research carried on in the University. There are strong general collections in the many subject fields in which courses are offered. Collections include not only the most recent books and periodicals on the subject but also the major works of the past. For the support of research, there are many complete files of newspapers, journals, reports, and society proceedings from various parts of the world. Large collections of early books, journals, and newspapers are available on microfilm. The library is the depository for theses and dissertations produced at the University.

The University Libraries are strong in source materials for the study of medieval history and culture, source materials on Reformation history, Romance languages and literature, and American literature; long and complete files of journals on chemistry, geology, botany, and zoology; and extensive files of herd registry books and agricultural reports. Collections are strong in American fiction and poetry of the nineteenth century, early French literature, editions of Cervantes, Spanish drama of the golden century, Restoration drama, science fiction periodicals, and the history of economics, especially the economics of France in the nineteenth and twentieth centuries. Collections are being developed in Slavic studies, in the history of science, and in selected writers—Algren, Beckett, Flaubert, Hawthorne, Thomas, and Thurber.

The Libraries provide a collection of books and journals especially selected for undergraduate reading. This collection, along with study carrels, is located on the second and third floors of the Main Library. A reference librarian is on duty in this area during the day to provide assistance to undergraduates.

The Main Library is a depository for the official publications of the United States cities and of foreign countries. The Main Library also possesses the British Parliamentary Papers, including the rare early volumes. The numerous series of the publications of the League of Nations and the United Nations are well represented. The publications of the Ohio Academy of Science, the Ohio State University Scientific Association, and the Ohio Biological Survey are deposited in the Main Library.

In addition to coin-operated copying machines located at various places in the libraries, a staffed copy service is provided on the second floor of the Main Library.

The Libraries provide an automated bibliographic information retrieval service in the Health Center Library. For the present the service is limited to the biomedical area, but it is expected to expand in the near future as more machine-readable data become available.

In addition to these collections and facilities for study and research, the Main Library provides general and recreational reading. The Browsing Room, an area set aside for such reading and staffed with a librarian to assist patrons in reading programs, contains approximately 6,500 volumes of the world's literary classics and currently published books in many subjects. The collection of the Browsing Room includes a seven-day loan collection of the best sellers and a circulating phonograph record collection. Further details about the libraries and their operation may be found in Library Handbook for Undergraduate Students and Library Handbook for Faculty and Graduate Students.

**Research**

**THE OHIO STATE UNIVERSITY RESEARCH FOUNDATION**

Research, which is a basic aspect of graduate education, is performed by the faculty and graduate students within the departments. Additionally, sponsored research at The Ohio State University offers many opportunities for graduate student participation. In 1967-68, 827 graduate students were employed as research associates in the sponsored research program administered on behalf of the University by the Ohio State University Research Foundation. This program involved more than 700 active research projects at an aggregate annual cost of about $16,784,000.

The Ohio State University Research Foundation was incorporated in 1936 as a nonprofit educational institution, independent of the University but with the expressed purpose of aiding in the develop-
ment and administration of research activities undertaken on behalf of the University in the pursuit of its academic objectives. Control of the Foundation is vested in a Board of Directors drawn from trustees, administration, faculty, and alumni of the University and from nationally prominent engineers and scientists.

A large portion of the sponsored research administered by the Research Foundation is funded by various agencies of the federal government, with lesser amounts being supported by industry, foundations, and other private sources. Many projects represent the research efforts of an individual working alone, while other projects involve the efforts of research faculty and graduate students working as a team.

The sponsored research program at Ohio State is built around the research interests of the faculty and graduate students and may draw upon the full research facilities of the University. The Research Foundation does not maintain research personnel and facilities independent of the University.

In addition to research opportunities in the engineering, life, and physical sciences, there are growing programs in the social and behavioral sciences, humanities, and education. Through participation in one of the sponsored research projects, the graduate student may gain valuable research experience and augment his financial resources. In many instances thesis problems which will qualify for support under a program of sponsored research can be selected.

With a steady increase in the pursuit of graduate studies at the University, it is envisioned that the cost of the sponsored research program of the Ohio State University Research Foundation may exceed $20 million annually soon after 1970, and that well over 1,000 graduate students and postdoctoral research associates may be participating in the program.

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER

In 1882, the Ohio Legislature passed a law establishing the Ohio Agricultural Experiment Station at Columbus on the campus of the Ohio Agricultural and Mechanical College. The law, enacted through the efforts of farmers, agricultural societies, the faculty, and the State Board of Agriculture, stated that the Station's function was "prosecution of practical and scientific research in agriculture and forestry, and the development of the agricultural resources of the State." In 1887, Congress passed the Hatch Act, which provided a federal appropriation annually to each state "to aid in acquiring and diffusing information on subjects connected with agriculture and to promote scientific investigations and experiments respecting the principles and applications of agricultural science." Headquarters of the Station remained in Columbus until 1892, when lack of space at the University Farm, frequent flooding of plot lands by the Olentangy River, and other factors brought about the relocation of the Experiment Station in Wayne County.

The original tract of 452 acres has since expanded to more than 2,000 acres at the headquarters in Wooster, over 2,500 acres in nine branch locations located at strategic points throughout the state, an additional 2,000 acres comprising the Eastern Ohio Resource Development Center in Noble County, Ohio, plus plot lands and facilities at The Ohio State University. Research facilities in 1966, including land, buildings, and equipment, were valued at more than $15 million. The Research Center has an annual operating budget of nearly $5.5 million.

In 1965, the name was changed from the Ohio Agricultural Experiment Station to the Ohio Agricultural Research and Development Center to more accurately reflect the function and program of the institution. The Center is governed by a Board of Control consisting of the members of the Ohio State University Board of Trustees, plus the State Director of Agriculture. The Center is under the leadership of a Director, who also serves as a Dean of the College of Agriculture and Home Economics at The Ohio State University and as Director of the Ohio Cooperative Extension Service. The professional staff consists of about 250 scientists, including 150 faculty members at The Ohio State University, who devote part time to Center research. The research effort is supported by 130 technical and research assistants, the latter mainly graduate students at the University, plus about 300 Civil Service employees.

About 350 research projects are conducted by 13 academic disciplines: agricultural economics and rural sociology, agricultural engineering, agronomy, ani-
mal science, plant pathology, dairy science, dairy technology, forestry, home economics, horticulture, poultry science, veterinary science, and zoology and entomology.

The Research Center cooperates with the U.S. Hydrological Laboratory at Coshocton, as well as with numerous other federal agencies. Under a cooperative agreement, Center scientists have access to large acreages, herds, and flocks of the Ohio State Department of Mental Hygiene and Correction. In instances where special local problems arise, permission may be obtained to conduct research on privately owned land.

Housing facilities for graduate students are provided at Wooster in the form of a four-unit married graduate student apartment building, plus a single graduate residence. Occupancy of these facilities is on a first-come, first-served basis, provided individuals making application are registered in the Graduate School and that the facilities available are adequate for family size or other requirements.

Each year the Research and Development Center provides for the support of graduate work by making available to the various subject matter departments funds for the payment of graduate student stipends.

Graduate students may do their entire thesis or dissertation problems at Wooster under supervision of members of the graduate faculty. Course requirements must be met through classroom attendance at the University.

ENGINEERING EXPERIMENT STATION

On April 18, 1913, the Board of Trustees of The Ohio State University was authorized and required by an act of the Ohio General Assembly to establish an organization to be known as the Engineering Experiment Station. The purpose of the Station, to quote from the act of establishment, is “to make technical investigations and to supply engineering data which will tend to increase the economy, efficiency, and safety of the manufacturing, mineral, transportation, and other engineering and industrial enterprises of the State, and to promote the conservation and utilization of its resources.”

These objectives are met through the financial and logistical support which the Station provides to the teaching department of the College of Engineering; through contractual arrangements with industrial, business, and government research sponsors; and through service programs directed toward the immediate assistance of business and industry.

Control of the Station is vested in the Engineering Experiment Station Council, composed of a director and six members chosen from the faculty of the College of Engineering. Work on projects administered through the Station is supervised and conducted by members of the College of Engineering faculty in conjunction with their teaching activities and with the assistance of research engineers, technicians, and students.

Sponsored research and service programs administered through the Station are conducted in the various laboratories of the College. All University equipment and facilities are available to the programs when not in use for instruction. In addition, the Station administers a number of interdisciplinary laboratories including the Building Research Laboratory, the Aggregate Laboratory, and the Refractories Research Center.

The Station also operates and maintains for all departments within the University a Water Resources Center, a 10 KW Nuclear Reactor, and a Transportation Research Center. A Highway Research Laboratory presently is being developed in Logan and Union Counties.

Problems in practically every field of engineering research, both fundamental and applied, may be undertaken by the Station. Limited funds are provided for fundamental research and applied research of general interest. The legislation establishing the Station provides for cooperative research agreements with agencies of local, state, and federal governments, business and industrial firms, associations, and individuals. Particular emphasis is placed on programs of interest to individual firms or industries within the State of Ohio and those utilizing the natural resources of the State. The research programs utilize faculty, staff, and graduate students drawn from the entire campus, but predominantly from the College of Engineering. Many undergraduate students are employed on an hourly basis as laboratory assistants. This arrangement enables the faculty members to carry on research in their particular fields, provides the resources for graduate
student research and experience, and contributes to the industrial economy of the State.

The Station publishes bimonthly the *News in Engineering*, which carries items of interest about the activities and research publications of the College of Engineering. This publication includes timely articles, mostly by the University staff members and alumni, on research and development, has a mailing list of about 4,000, and is being sent, by subscription or on exchange, to addresses all over the world.

Results of research, both fundamental and, in many cases, applied research, are published as bulletins of the Station. Compilations and library research are published as circulars. Lists of bulletins and circulars will be provided upon request.

**BUREAU OF BUSINESS RESEARCH**

The Bureau of Business Research has earned recognition for its work with faculty and graduate students and for its cooperative studies in business and industry which are important in the development of the state. Through its research activities and its monthly publication, the *Bulletin of Business Research*, the Bureau maintains continuous contacts with representatives of trade and industry in the state, as well as with research and administrative departments of the federal, state, and local governments. Research that meets the standards of the Bureau is reported in books, monographs, or special studies of the Bureau.

The College Data Processing Center includes an IBM 1620 Data Processing System and ancillary equipment which is available for research as well as for instructional purposes. The resources of the University Computer Center are available for appropriate research.

**COMPUTER CENTER**

The Computer Center is a research and service facility for the faculty, staff, and students of all departments of the University; it is maintained as a unit of the Office of Research. The principal objectives of the Computer Center are (1) to provide training and assistance in the use of digital computers to all University students and staff who seek this service; (2) to do research in computing techniques; and (3) to provide computational services for research projects in all fields which require extensive computations.

The University Computer Center is one of the best-equipped computer centers in the country. Advanced techniques in computer programming and in computer design are under constant evaluation and are incorporated as soon as practicable.

The current equipment consists of the following IBM computers: a 360/75, a 360/50, a 7094, five 1130's, a 1460, two 1401's, and a 1620. A number of remote console terminals are available throughout the campus as are an ample number of unit record machines. An analog-to-digital tape converter is provided for converting analog tapes to digital tapes suitable for use on digital computers. Paper tape handling equipment, two drum plotters, and a graphics display terminal, all of which are connected to computers, are available.

The central facility is located at the Systems Engineering Building, but Computer Center facilities are also available at four bulk terminals—the Research Center (west campus), Robinson Laboratory, Hagerty Hall, and Plumb Hall.

The third-generation System/360 computer in the Systems Engineering Building provides both a powerful batch system on the 360/75 and a time-sharing system on the 360/50 to service the remote control terminals. The bulk terminals transmit to and receive their jobstreams from the 360/75 by wire using IBM 1130's. The University was among the first users in the area to initiate transmission of programs and data by wire. The original OSU Operating System for the IBM 7094 offered one of the first, although limited, versions of time-sharing computer operation. This Operating System has been discontinued to accommodate the increased utilization of the 7094 for other research.

The Computer Center has a few part-time programming positions available for graduate students. If a student has chosen to do research in computer programming techniques, in programming applications, or in other related areas, valuable experience can be gained. Computer programming experience continues to be a prime asset when the degree is completed. Further information may be obtained by contacting Roy F. Reeves, Associate to the Vice President for Research, and Director of the Computer Center.
RESEARCH INSTITUTES

Institutes are units of the University established by the Board of Trustees to facilitate interdisciplinary research. They have laboratories and equipment and conduct sponsored research. They may provide departmental seminars for graduate students and faculty. Each institute operates under a director who is a member of the graduate faculty.

The following institutes are currently active on campus:
1. Institute of Geodesy, Photogrammetry, and Cartography.
2. Institute of Nutrition.
3. Institute for Polar Studies.

THE CENTER FOR RESEARCH AND LEADERSHIP DEVELOPMENT IN VOCATIONAL AND TECHNICAL EDUCATION

Office: 1900 Kenny Road

While the Center is not a teaching department, it is interested in graduate education. This University-wide, nationally oriented research and development group functions in close cooperation with the U. S. Office of Education, state staffs of vocational education, and national professional organizations to focus on significant problems in vocational and technical education.

Three of the major objectives of the Center are as follows:
1. To stimulate, coordinate, and conduct research in vocational and technical education;
2. To upgrade vocational education leadership through advanced study and inservice education programs; and
3. To provide a national information retrieval storage and dissemination system for vocational and technical education linked with the Educational Resources Information Center located in the U. S. Office of Education.

The Center's continuing staff is comprised of faculty members who are specialists in areas of vocational and technical education and the supporting disciplines of economics, sociology, and psychology. Staff members may teach graduate courses, conduct interdepartmental seminars, and advise graduate students in the Colleges of Agriculture and Home Economics, Social and Behavioral Sciences, and Education. Graduate research associates with specialized interests in vocational and technical education participate in ongoing projects at the Center.

Students interested in associateships should contact the Director of the Center.

Admission and Registration

ADMISSION PROCEDURES

Graduates of accredited baccalaureate programs are eligible to seek admission to a program of graduate studies. Application materials, which may be obtained by writing to The Ohio State University, Admissions Office, 190 North Oval Drive, Columbus, Ohio 43210, enable the applicant to apply simultaneously for admission to the Graduate School and also for an assistantship and/or a fellowship. (See page 101.)

All application materials and supporting documents, except recommendation forms, must be returned directly to the Admissions Office. The Admissions Office will coordinate the processing of the application materials with the appropriate graduate department and the Office of the Graduate School.

The application materials and supporting documents must be received by the Admissions Office not later than September 1, December 1, March 1, or June 1, for the Autumn, Winter, Spring, or Summer Quarter, respectively. Assistantship and fellowship applicants must arrange for the arrival of their applications and credentials in advance of the deadline listed on page 101.

Each applicant must present two complete sets of separate official transcripts from each college or university previously attended. These official transcripts must contain:
1. A complete list of courses taken and grades received.
2. The date of graduation of the applicant.
3. The degree(s) received by the applicant.

The applicant should request the registrar of each college or university previously attended to send two complete sets of official transcripts directly to the Admissions Office. Applicants are not required to submit transcripts of coursework completed at The Ohio State University. Transcripts cannot be returned to applicants.

An applicant who files an application during his final year of academic work toward a baccalaureate or professional degree will be considered for admission and may be accepted on a provisional basis pending subsequent filing of satisfactory transcripts showing final coursework and degree awarded. In order to register for classes in subsequent quarters, the applicant must clear the provisional admission in the Admissions Office within two weeks of the opening date of classes.

ADMISSION REQUIREMENTS

Basic requirements for admission to the Graduate School are established by the Graduate Council, a representative body of the graduate faculty. Minimum requirements include:

1. A baccalaureate or professional degree earned from a department of approved standing and granted by an accredited college or university.

2. In general, a 2.7 or better cumulative point-hour ratio (on the basis of the 4.0 grading system of The Ohio State University) for all previous academic work.

3. Prerequisite academic work which gives evidence that the applicant should be able to pursue effectively the graduate courses of the department in which he wishes to specialize. Prerequisites for graduate work in specific departments are set forth elsewhere in this catalog.

Each applicant must request three recommendations from persons acquainted with his academic program and scholastic ability. The recommendation forms, which are included in the packet of application materials, should be forwarded directly to The Ohio State University in care of the chairman of the department in which the applicant intends to specialize.

TEST INFORMATION

ADMISSION TEST FOR GRADUATE STUDY IN BUSINESS (ATGSB)
Each applicant for admission to Accounting or Business Administration, regardless of previous academic record, must submit results of the Admission Test for Graduate Study in Business before admission to these departments will be considered.

GRADUATE RECORD EXAMINATION (GRE)
Applicants for admission to certain programs or under particular circumstances are required to submit scores on the Aptitude and the Advanced portions of the Graduate Record Examination as indicated below. The GRE consists of two parts: the Aptitude Test which contains both a verbal and quantitative portion, and the Advanced Test which assesses achievement in the student's major field.

Each fellowship or traineeship applicant (with exception of those applying for admission to accounting or business administration) must submit scores from the Aptitude Test of the Graduate Record Examination. Fellowship or traineeship applicants applying for admission to accounting or business administration must submit scores from the Admission Test for Graduate Study in Business.

A. All applicants to the following departments are required to submit scores of both the GRE Aptitude and Advanced Tests:

<table>
<thead>
<tr>
<th>Department</th>
<th>Advanced Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biophysics</td>
<td>Mathematics or any advanced test in science</td>
</tr>
<tr>
<td>Music</td>
<td>Music</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>Biology or Chemistry</td>
</tr>
<tr>
<td>Physiology</td>
<td>None Required</td>
</tr>
<tr>
<td>Psychology</td>
<td>Psychology</td>
</tr>
</tbody>
</table>

B. All applicants to the following departments whose cumulative point-hour ratios are below 3.0, are required to submit scores of both the GRE Aptitude and Advanced Tests:

<table>
<thead>
<tr>
<th>Department</th>
<th>Advanced Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology</td>
<td>Anthropology</td>
</tr>
<tr>
<td>Astronomy</td>
<td>Mathematics or Physics</td>
</tr>
<tr>
<td>English</td>
<td>Literature</td>
</tr>
<tr>
<td>History</td>
<td>History</td>
</tr>
<tr>
<td>Physics</td>
<td>Physics</td>
</tr>
<tr>
<td>Political</td>
<td>None Required</td>
</tr>
<tr>
<td>Science</td>
<td>Sociology</td>
</tr>
<tr>
<td>Sociology</td>
<td>Sociology</td>
</tr>
</tbody>
</table>
An applicant to the program in plant pathology whose cumulative point-hour ratio is below 3.0 must submit scores from the Aptitude Test.

Each applicant to the Department of Chemistry whose cumulative point-hour ratio is below 2.9 must submit scores from the GRE Aptitude and Advanced Test in Chemistry.

C. An applicant whose cumulative point-hour ratio is below 2.7 and who intends to specialize in any of the following fields is required to submit scores on both the Aptitude and the appropriate Advanced Test of the GRE: biochemistry (Advanced Test in Chemistry), botany (Advanced Test in Biology), economics, education, engineering, French, geology, mathematics, microbiology (Advanced Test in Biology), philosophy, physical education, physiological chemistry (Advanced Test in Chemistry), Spanish or speech, zoology and entomology (Advanced Test in Biology).

D. All other applicants with less than 2.7 point-hour ratios must forward results of the GRE Aptitude Test to receive full consideration for admission.

Applicants to the Graduate School other than those referred to in sections above will not be required to submit GRE scores.

Graduate Record Examinations, for which a fee is charged, are scheduled throughout the United States in January, February, April, July, October, and December. Preregistration directly with the Educational Testing Service is required several weeks in advance of test administration dates. Detailed information and registration forms may be obtained from the Admissions Office or from the Educational Testing Service, 1947 Center Street, Berkeley, California 94704, or Box 955, Princeton, New Jersey 08540.

The applicant is encouraged to repeat the GRE if he completed this examination more than one year prior to the date of his application. Applicants who are required to submit GRE scores are requested to indicate that they are making arrangements for the test(s) on their applications for admission to the Graduate School.

Applicants to the Graduate School of The Ohio State University, with baccalaureate degrees from nonaccredited colleges or universities, are required to submit scores on the Graduate Record Examination prior to receiving consideration for admission. The test scores must include the aptitude portion and the advanced test if required by the department. (Look elsewhere in this catalog for departmental requirements.)

An applicant seeking admission with a nonaccredited undergraduate degree who subsequently has successfully completed a master's degree at an accredited college or university, may be admitted to the Graduate School without taking the Graduate Record Examination with approval of the departmental graduate committee and of the Dean of the Graduate School.

INTERNATIONAL STUDENT ADMISSION

International students having adequate preparation for graduate study are invited to apply for admission to the Graduate School. In addition to the foregoing requirements, all students from non-English-speaking countries must submit evidence to the Admissions Office of adequate training in the use of English. This ordinarily will mean achievement of a satisfactory score on tests administered in the student's home country. If admitted to the Graduate School, such students shall have as a condition attached to their admission the requirement of an additional examination in English, which is arranged for and conducted by The Ohio State University Department of English.

The Admissions Office is responsible for referring students to the Department of English for the examination. The results of the examination are communicated by the Department to the Secretary of the Graduate School and to the student's department of specialization. If a deficiency in English is reported, the student's adviser is responsible for listing special courses on the student's schedule card. The basic course is English 071, and the supplementary course in speech is 035. When both of these courses are required in the student's first quarter, he may register for only one graduate-credit course; if only English 071 is required, he may register for more than one graduate-credit course. The Depart-
ment of English is responsible for determining when the deficiency is removed and for notifying the Secretary of the Graduate School and the student's adviser of the removal.

ADMISSION OF FACULTY MEMBERS OF THE OHIO STATE UNIVERSITY TO GRADUATE SCHOOL

Faculty Rule 41.19 places restriction on eligibility for graduate degrees as follows: "No member of the University Faculty with the rank of Professor, Associate Professor, or Assistant Professor, no College or University official, or no person who has held such rank or has been such an official within the past five years, will be permitted to become a candidate for a degree administered by the Graduate School." Interpretation of the meaning of "College or University official," as well as exceptions to this Rule, is made by the Executive Committee of the Graduate School.

CLASSIFICATION OF GRADUATE STUDENTS

REGULAR GRADUATE STUDENTS

Students who are approved for work toward graduate degrees at The Ohio State University are designated as regular students. A program of study will be outlined for a regular student at the time of first registration in the Graduate School by a departmental committee on graduate study or by an adviser.

SPECIAL GRADUATE STUDENTS

A student in this classification is one who does not expect to work toward an advanced degree but elects to schedule courses for a special purpose, or one with course deficiencies which must be completed satisfactorily prior to approval as a regular student (degree-seeking status). Frequently, a student intending to pursue a doctoral program is admitted as a special student until his advisory committee is organized, after which his committee may designate him as a regular student.

All special graduate students must comply with all the regular requirements for admission to the Graduate School. Their courses of study may be arranged with maximum freedom by a departmental committee on graduate study or by an adviser. Any course (except 999 research) announced for both undergraduate and graduate students is open for election by a special student.

Should a special student subsequently desire to become a regular student, the amount of credit he is to receive for work already completed will be determined by the department (usually by its graduate committee) in which he expects to specialize.

Provisional—Applicants who file an application during their final year of work toward a bachelor's degree will be considered for admission and may be accepted on a provisional basis pending subsequent filing of satisfactory supplementary transcripts showing the degree awarded. If a student has completed all the requirements for a degree and his degree will not be conferred before his proposed entrance into the Graduate School, a statement should be presented from the registrar of the undergraduate college stating that the degree requirements have been fulfilled in addition to the date on which the degree will be conferred. Admissions Office clearance within two weeks of the opening date of classes is requisite to further registration in the University.

TRANSIENT STUDENTS

A student actively pursuing a graduate program at another college or university who wishes to earn credits for transfer to that institution may be admitted as a transient student for one quarter. He will not be required to submit official transcripts. He must present a statement of good standing and approval of his dean or registrar for designated courses. Graduate student transient application materials may be obtained by writing directly to The Ohio State University Admissions Office, 190 North Oval Drive, Columbus, Ohio 43210.

TRANSFER CREDIT

Upon recommendation by the appropriate department graduate committee, credit for study at another graduate school may be approved by the Dean to apply toward the minimum credit-hour requirement for a graduate degree. Residence requirements establish the maximum number of hours
of credit that may be transferred. (See pages 24 and 35.) Credit will be accepted only for courses taken with grades of B or better while in good standing in an accredited graduate degree program. All work for the master’s degree, including work at other institutions, must be completed within six years. For Ph.D. program credit, the work must be at the post-master’s level in a field in which the doctoral degree is awarded. Credit for graduate coursework at another institution is properly transferred through the Admissions Office.

Graduates of The Ohio State University may, under conditions stated above, transfer from another university one-half of the required work provided they register for a minimum of two quarters in the Graduate School of The Ohio State University.

In all cases, a candidate for the master’s degree is subject to a final examination on all work offered for the degree. He must also be registered in the Graduate School during the quarter in which he expects to receive the degree.

COST OF A YEAR’S WORK

The total cost of a year’s work—three quarters—will depend upon the course pursued. In some courses, considerable material is used by the student, and this must be paid for by him. The cost of books is an item which varies with the courses taken.

In order to furnish information, there is listed below an estimate of the average payments required by the University for the academic year and the estimated cost for room and board. Fees to the University are paid prior to the beginning of each quarter.

ESTIMATE OF EXPENSES FOR THE ACADEMIC YEAR (Three Quarters)

Acceptance Fee (nonrefundable)* $ 25
Resident Fee** ........................................... 510
Deposits to cover laboratory materials and breakage ........................................... 50
Books .................................................................. 75
Room and Board in Residence
Halls ................................................................. 978
Total .................................................................. $1,638

* A $25 nonrefundable Acceptance Fee is required of all students admitted to the Graduate School for the first time. The Acceptance Fee statement is mailed to each newly admitted graduate student. This fee must be paid prior to the release of registration materials. Students admitted for the Autumn Quarter will receive the Acceptance Fee statement after April 1.

** Out-of-State Tuition fee, $200 additional per quarter.

In order to meet the necessary expenses of registration, books, required deposits, and one quarter’s payment for room and board, the beginning out-of-town student should come prepared to spend $400 to $500 during the first ten days of a quarter. $200 more if he is not a resident of Ohio.
## FEES AND EXPENSES*

<table>
<thead>
<tr>
<th></th>
<th>OTHER FEES</th>
<th>QUARTER FEE</th>
<th>EACH TERM SUMMER QTR.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACCEPTANCE FEE</strong> (nonrefundable)</td>
<td></td>
<td></td>
<td>$25</td>
</tr>
<tr>
<td><strong>RESIDENT FEE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time Students</td>
<td>$170</td>
<td>$85</td>
<td></td>
</tr>
<tr>
<td>Part-time Students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For courses totaling 6 or fewer hours</td>
<td></td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Students enrolling for more than 6 hours in courses that extend beyond a single term shall be assessed the full fee</td>
<td></td>
<td>170</td>
<td></td>
</tr>
<tr>
<td>The minimum fee for a student registered in the Summer Quarter</td>
<td></td>
<td>85</td>
<td></td>
</tr>
<tr>
<td><strong>OUT-OF-STATE TUITION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In addition to the above fees, a full-time student pays</td>
<td></td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>In addition to the above fees, a part-time nonresident student pays</td>
<td></td>
<td>100</td>
<td></td>
</tr>
<tr>
<td><strong>SPECIAL UNIVERSITY FEES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory Deposit</td>
<td></td>
<td></td>
<td>Varies</td>
</tr>
<tr>
<td>All laboratory supplies are sold to students at the Laboratory Supply Store, McPherson Chemical Laboratory, and charged against deposits. Instructors shall not permit a student to engage in laboratory work unless the student has shown a receipt from the Bursar for the deposit required in the course</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Fees</td>
<td></td>
<td></td>
<td>Vary</td>
</tr>
<tr>
<td>In the case of students registered and receiving college credit for short courses, workshops, geology field trips, conservation laboratory, and work of a similar nature, the fee assessed will be in accordance with the fees for the undergraduate colleges.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Insurance</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>All international students are required to enroll each quarter for student health insurance.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>THESIS FEES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ph.D. Dissertation</td>
<td></td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Master's Thesis</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>A dissertation fee is charged for binding and microfilming Ph.D. dissertations and for publication of the abstracts; the thesis fee is assessed for binding master's theses and for publication of the abstracts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>These fees must be paid not later than one week before the Commencement date on which the candidate expects to receive the degree.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Subject to change without notice. Additional fees are assessed for certain courses; for information regarding these expenses, consult the current course fee listing available in the Office of the Registrar.
REGISTRATION PROCEDURES

INITIAL REGISTRATION PROCEDURES
After receiving the official notification of admission, the newly admitted graduate student must forward a $25 Acceptance Fee and a Medical Examination Report on or before a date which will be communicated by the Admissions Office. Following the recording of this material, the student will receive the appropriate registration materials either by mail or directly from the Office of the Registrar if notification of admission is received within two weeks of the opening of classes. After receipt of the material, he will be directed to the department in which he wishes to obtain an adviser or in which he already has been assigned an adviser.

In reporting to the department, the student will consult with the Graduate Committee Chairman or his adviser if one already has been assigned. When the adviser has approved the courses to be taken, the student then will complete a schedule request card and will send or deliver personally all registration materials to the Office of the Graduate School.

UNIVERSITY SCHEDULING AND REGISTRATION PROCEDURES
For information concerning course scheduling, fee assessment, and final registration procedures refer to Courses of Instruction, Program Planning Guide, and General University Academic Policies and Procedures which is published as the University Policies and Course Offerings catalog.

Additional information and scheduling instructions will be provided each quarter at the beginning of the registration period announced in the academic calendar.

Registration and payment of fees are required of all students by the close of the third business day preceding the first day of classes each quarter. Fees paid by mail must be postmarked by the fourth business day preceding the first day of classes each quarter. Failure to meet this requirement will result in a penalty assessment. The second Friday of each quarter shall be the final deadline for fee payments with penalty.

Graduate students in residence during the Spring Quarter who will not be on campus during the summer should complete an Adviser Approval Card. The Autumn Quarter schedule should be entered on this card over the adviser's signature and retained by the student. Regular schedule cards mailed in August will be accepted without signatures of advisers if they are accompanied by a signed Adviser Approval Card.

SCHEDULE OF A GRADUATE STUDENT
The usual schedule of courses for a regular full-time graduate student should approximate 15 credit hours of graduate courses. This schedule may be increased or decreased by the student's adviser according to his judgment by the nature of the courses to be taken in any quarter, the academic record of the student, and the employment plans of the student; but no student may enroll for more than 18 hours exclusive of audit courses. The adviser will make proportionate adjustments in the student's schedule for any term of the Summer Quarter.

ENROLLMENT OF GRADUATE STUDENTS RECEIVING STIPENDS
I. Graduate students holding the title Teaching, Graduate Research, Graduate Administrative, or Graduate Laboratory Assistant or Associate shall be registered every quarter such appointment is held, and minimal registration shall be 7 credit hours. A request for waiver of this minimal registration must be submitted in writing to the Graduate School by the student's faculty adviser. (Waivers will routinely be granted during the quarter in which the student is scheduled to complete the general examinations for admission to candidacy for the doctorate.)

II. All graduate students holding fellowships or traineeships leading to a degree, regardless of the source of funds, should be registered in the Graduate School for a minimum of 15 hours a quarter. Exceptions to this rule will be considered on an individual basis and only for limited periods of registration. Requests for a waiver should be submitted by the faculty adviser of the fellow or trainee.

CERTIFICATION AS A FULL-TIME GRADUATE STUDENT
For purposes of certifying percentage of full-time enrollment to the Veterans Administration, 7 quarter hours is regarded
as a minimal full-time load for graduate students who also hold the position of Graduate Teaching Assistant or Associate, or Graduate Research Assistant or Associate. Veterans not holding such appointments are required to be enrolled for at least 12 hours' work in order to qualify for full benefits, and the scale used for Graduate School certification is as follows:

<table>
<thead>
<tr>
<th>Load</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full load</td>
<td>12 or more</td>
</tr>
<tr>
<td>3/4 load</td>
<td>9-11 credits</td>
</tr>
<tr>
<td>1/2 load</td>
<td>6-8 credits</td>
</tr>
<tr>
<td>Fees only</td>
<td>1-5 credits</td>
</tr>
</tbody>
</table>

THE MARKING SYSTEM
For information on the marking and grading system, refer to the University Academic Policies and Course Offerings catalog.

AUDIT COURSES AND NONCREDIT COURSES
A properly registered student may audit courses designated by his adviser. Such courses must be entered officially upon the schedule cards of the student. The instructor in charge of the course may refuse to accept the student's roll card when classes begin. In such cases, the instructor is to notify the Secretary of the Graduate School that he does not accept the student as an auditor.

One who is not a student in the University may be admitted as an auditor by the Director of Admissions after satisfying all entrance requirements and paying the fees required.

A graduate student may register for certain courses for which he will not receive graduate credit if his adviser believes that he should be familiar with the subject matter of the course. A "non-graduate-credit" course is any course taken by a graduate student for which graduate credit toward a degree is not allowed, either because of the level of the course, or because it is a prerequisite for admission to graduate work in that area.

A student registered for a non-graduate-credit course must complete all the requirements of the course as though it were taken for credit. The instructor must submit a final grade for the non-graduate-course as earned by the student. The non-graduate-credit course may be counted toward a full schedule but may not be counted toward a degree.

The adviser will indicate the course or courses to be taken as non-graduate-credit courses or as audit courses. For non-graduate-credit courses he will mark "none" above the number of hours, and for audit courses he will insert the term "audit" to the right of the column designated "credit hours."

REGISTRATION OF GRADUATE STUDENTS IN COURSES OFFERED BY THE COLLEGE OF LAW
Graduate students may register in courses offered by the College of Law only with the approval of the Dean of the Graduate School and of the Dean of the College of Law. Permission should be obtained at least one month prior to the beginning of the quarter in which the student desires to register for law courses.

First- and second-quarter first-year courses in the College of Law are as a general rule open to students registered in the Graduate School who satisfy the general entrance requirements of the College of Law. Advanced law courses are open to Graduate School students who show formal or other legal training which, in the opinion of the Dean of the College of Law, qualifies those students for the courses desired.

Courses taken by Graduate School students in the College of Law are elected subject to all practices followed by the College of Law with respect to class and examination scheduling, grading, and grade reporting.

GRADUATE CREDIT FOR UNDERGRADUATES
An undergraduate student at The Ohio State University who has completed three years of coursework and whose full time is not required for the completion of coursework for his baccalaureate degree, may select certain courses for graduate credit provided his cumulative point-hour ratio is 2.7 or above. He must obtain permission from the instructor in charge of the course, from the secretary of his college, and from the Office of the Graduate School before registering for the course. He must achieve a grade of B or better in such a course in order to obtain graduate credit. A student who meets these requirements and petitions for graduate credit cannot use these courses for graduate credit until he is admitted to the Graduate School, and until the department in which he wishes to specialize accepts the work as graduate credit. Not more than 15 quar-
ter hours of such work may be counted toward an advanced degree.
See Combined College—Graduate Programs, page 30.

RETROACTIVE GRADUATE CREDIT
Under rules of the Graduate Faculty, a student must be registered in the Graduate School in order to receive graduate credit. The conditions under which a regularly enrolled undergraduate senior may petition in advance for a maximum of 15 hours graduate credit are clearly stated under Graduate Credit for Undergraduates.

The Executive Committee has refused consistently to approve petitions for retroactive credit. This policy is based on the fact that graduate students in 600 or 700 courses are expected to do extra reading, present extra reports, and be graded according to graduate standards. Students temporarily registered in an undergraduate college should, therefore, not expect that credit earned before admission to Graduate School will be counted at a later date toward a graduate degree. Graduate credit cannot be given for courses completed in order to qualify a student for admission to graduate standing.

PROCEDURES FOR A CHANGE IN COURSES
After a student's schedule cards have been approved by the Office of the Graduate School, changes in his course of study will be made only upon the written request of the student's adviser. This written request must be presented by the student to the Office of the Graduate School. Changes in courses are permitted during the first week of the quarter without penalty. Penalties of $1 per change will be assessed for changes after the first week of the quarter. No credit will be given on University records for courses taken without proper authorization.

PROCEDURES FOR WITHDRAWAL FROM COURSES
In order to withdraw officially from any registered course, the student must report to his adviser to have the removal noted on a change card which must be presented to the Office of the Graduate School; otherwise, the student will be marked "failed" in the course from which he withdraws. After the first seven weeks of the quarter, the student must obtain, in addition to his adviser's approval noted on a change card, a statement of the quality of the work being done by the student in the course. The student will present these documents at the Office of the Graduate School, and the Dean will decide each case on the basis of the information submitted.

PROCEDURES FOR A CHANGE IN DEPARTMENT OF SPECIALIZATION
If, after one or more quarters of graduate work, a student wishes to change his registration to another department, he must petition the Executive Committee of the Graduate School for permission. Petition forms are available in the Office of the Graduate School.

PROCEDURES FOR TRANSFER TO A COLLEGE IN THE UNIVERSITY
A student who desires to transfer from the Graduate School to a college of the University must make his application for such transfer to the Director of Admissions. This transfer must be approved by the Director of Admissions before the student will be permitted to proceed with his registration in the college which he is proposing to enter.

PROCEDURES FOR WITHDRAWAL FROM THE UNIVERSITY
For information with respect to the procedures for withdrawal from the University, consult the University Academic Policies and Course Offerings catalog.

OFF-CAMPUS RESEARCH WORK
A graduate student who wishes to carry on off-campus research work in connection with his thesis or dissertation must have his program approved in advance by his adviser and by the Dean, must maintain his registration in the Graduate School under course 999, and must pay the regular fees during each quarter for which he desires credit. No student may carry off-campus research work unless he has credit for at least 45 hours of graduate work taken at this university. From 5 to 15 quarter hours of credit may be obtained during each quarter of registration for off-campus research, but not more than 30 hours of off-campus work may be applied toward a graduate degree. Students who intend to register for off-campus research should contact the Office of the Graduate School at least one month prior to the beginning of a quarter.
THESSES, DISSERTATIONS, AND RESTRICTED RESEARCH

Manuscripts on subjects or containing material preventing unrestricted publication may not be presented as theses or dissertations. However, if publication is restricted for reasons of national security, the student’s adviser and the department chairman shall immediately present a statement of the circumstances to the Executive Committee of the Graduate School for whatever action it considers appropriate.

CONCURRENT REGISTRATION IN PROFESSIONAL COLLEGES AND THE GRADUATE SCHOOL

A student who is registered in the College of Dentistry, the College of Law, the College of Medicine, the College of Optometry, the College of Pharmacy, or the College of Veterinary Medicine of this university, and who also wishes to enroll for graduate study, may be registered concurrently in the Graduate School if he has the proper qualifications for entrance. To secure this concurrent registration, the student must first obtain from the Director of Admissions an admission card to the Graduate School.

When a student is registered concurrently in the Graduate School and in one of the professional colleges listed above, he may count not more than 15 hours of professional coursework toward the master’s degree and not more than 30 quarter hours of such work toward the Ph.D. degree. These professional courses must be approved for graduate credit in order to be used as credit toward a graduate degree. Each professional college has an advisory committee which shall approve the program of graduate work proposed by each candidate for admission to the dual curriculum. The approved program must be submitted to the Dean of the Graduate School for approval before the student begins his graduate work.

Master’s Degree Programs

MASTER OF ARTS AND MASTER OF SCIENCE

Graduate programs leading to a Master of Arts or Master of Science degree are offered by most departments at The Ohio State University. A student’s program of study is administered by his major department and is subject to approval of the Graduate School. Since some variations exist in requirements of the several master’s degree programs offered by respective departments and colleges, it is important for the student to become acquainted with the specific requirements of his department and college since he must satisfy them as well as certain University requirements. The following description covers University requirements and will serve as a general guide.

RESIDENCE REQUIREMENTS

A minimum residence of three quarters at this university devoted wholly or partly to graduate work and the satisfactory completion of at least 36 hours of graduate credit under the guidance of this university is required.

PROGRAM OF STUDY

The program of study shall be selected in consultation with the student’s adviser, who is assigned by the graduate committee chairman following admission. It must show a reasonable degree of concentration in related or interrelated subjects under the direction of at least two members of the graduate faculty. The student’s program shall be subject to the general approval of the departmental graduate committee.

Although qualification for the master’s degree is not based entirely upon the completion of a definite number of hours, the amount of work satisfactorily completed must aggregate not fewer than 45 hours of graduate study, including the thesis. Usually a minimum of three quarters of graduate work by a regular, full-time student is required for the degree. This presupposes that the student has completed
the necessary prerequisites for graduate work in his chosen field and has been admitted to the Graduate School without condition. Few students receive the degree in the minimal period of three quarters.

**ACADEMIC STANDARDS**
To work toward a master's degree, a graduate student must maintain at least a B (3.0) average in all work included in the program of study outlined for his degree, with no more than one-third of the credit hours with grades of C or lower.

As soon as a student's record falls below the above standard, the Dean will designate the student as probationary and will immediately notify him, his adviser, and the Graduate Committee Chairman of the probationary status. If the student in his next quarter of registration is listed again as probationary because of unsatisfactory grades, he will be denied registration in the Graduate School as a regular student. If the student requests, he may have his status changed to special provided that the change is recommended by the departmental graduate committee. Any student who is registered as special and is listed as probationary for one quarter may be dismissed from the Graduate School by the Dean. A student, who had his status changed to special because of unsatisfactory grades, may petition the Executive Committee for reinstatement as a regular student provided that the graduate committee of his department, in a written statement, recommends such action.

**FOREIGN LANGUAGE REQUIREMENT**
Although many departments do not require a reading knowledge of a foreign language as a prerequisite for a master's degree, students expecting to work toward a Ph.D. degree may complete the foreign language requirement for the latter degree while completing the master's degree. A foreign language examination, or designated course, satisfactorily completed as a prerequisite for a master's degree or as a part of the master's program of study need not be repeated for the Ph.D. degree. The student must be registered in the Graduate School when the foreign language examinations are taken.

**THESIS**
The Graduate School has no general thesis requirement for the master's degree; departmental policies vary widely. Students should confer with departmental chairmen to determine which of the following plans will be required:

**Plan A**
Research experience which culminates in the presentation of a thesis is required. The subject of the thesis, together with the written approval of the adviser directing the work, must be filed in the Office of the Graduate School at the time the student applies for admission to candidacy.

**Plan B**
No thesis is required, but candidates shall complete a minimum of 50 hours of graduate coursework and perform satisfactorily on a departmental comprehensive written examination of at least four hours' duration.

*Instructions Concerning the Typing and Form of the Master's Thesis*, a booklet containing regulations governing the mechanics of preparing the thesis, may be obtained from the Office of the Graduate School.

A candidate who expects to receive his degree at the end of a given quarter must submit to his adviser the completed draft of his thesis not later than four weeks prior to Convocation. If the draft is approved, the candidate must prepare two typewritten copies following the specifications which may be obtained at the Office of the Graduate School. If the thesis is approved, the candidate shall deposit two copies in the Office of the Graduate School not later than a date which will be set by the Graduate School for each quarter and must pay at the same time to the Bursar a fee of $10 to cover the cost of binding. Bound copies of the thesis are deposited in the University Library. In addition, the candidate must file a short summary of his thesis on a form available in the Office of the Graduate School.

**ADMISSION TO CANDIDACY**
A student desiring to be admitted to candidacy for a master's degree must file his application at the Office of the Graduate School at a date not later than two weeks after the opening of the quarter in which the degree is sought. No student will be admitted to candidacy until he has re-
ceived graduate credit for at least 24 quarter hours. In certain cases, petitions to file at a later date are considered by the Executive Committee of the Graduate School. Petition forms are obtainable at the Office of the Graduate School. If permission is granted for the late filing of admission to candidacy, a penalty of $5 will be assessed.

FINAL EXAMINATIONS
A student working for a master's degree is required to pass the regular final examinations in all courses for which he is registered and must receive grades in accordance with the regulations of the Graduate School.

A final comprehensive examination is required to test the candidate's knowledge of the course of study which he has pursued. This examination is held after the submission and approval of the thesis. It is conducted by a committee composed of the candidate's adviser (chairman) and at least one other member of the graduate faculty chosen by him. The final examination may be either written or oral, or both, at the option of the examining committee. The chairman of the committee is responsible for arranging the examination and for certifying its results to the Dean. The report of a two-man committee must be unanimous in order to be considered satisfactory. If the examining committee consists of three or more members of the Graduate Faculty and there is a single dissenting vote, the case is referred for action to the Executive Committee of the Graduate School.

A candidate who fails in his final examination must register in the Graduate School and continue work for an additional quarter before an opportunity will be given for a second examination. If an earlier examination is desired, the department concerned may request special permission from the Executive Committee. No student will be permitted a third examination.

TIME LIMIT
The entire work for the master's degree must be completed within a period of six calendar years. In the case of students who take all the work for the master's degree during Summer Quarters, the above rule will be interpreted to include the seventh Summer Quarter.

SUMMARY OF REQUIREMENTS FOR THE MASTER'S DEGREE
1. Completion of a minimum of 45 hours of graduate coursework within six calendar years (50 hours under Plan B).
2. Achievement of a cumulative point-hour ratio of at least 3.0 in all courses taken for graduate credit.
3. Registration during the final quarter of the degree program.
4. Application for admission to candidacy not later than two weeks after the opening of the final quarter.
5. Successful completion of a final comprehensive examination.
6. Presentation of two typed copies of an approved thesis (Plan A).

Some schools and departments have specific requirements which must be met in addition to the general requirements set forth above. Consult the school or department section of your specific area of interest for further information.

MASTER OF ACCOUNTING
The professional master's degree program offered in the Department of Accounting leads to the Master of Accounting degree (M.Acc.) and constitutes the fifth year desirable for professional qualification. The program accommodates students with varying undergraduate backgrounds and has the objective of preparing the student to take his place in the business community as a professional accountant, either in a public accounting firm or in a business or governmental organization in an accounting capacity. The demand of the business world for students with graduate degrees in accounting far exceeds the supply, and the increasing importance of accounting in American society indicates that the master's degree is rapidly becoming an important criterion in determining professional competence in accounting. The CPA laws of some states, including those of Ohio, permit master's degree holders who have passed the CPA examinations to receive CPA certificates after one year of public accounting practice as opposed to the two-year requirement for those holding baccalaureate degrees.

The M.Acc. program is a one-year course of study for students having an undergraduate major in accounting. Prerequisite
coursework is required of others, but not to exceed a total of one additional year. The courses are planned to give the student a broad coverage of business subjects, including economics. In the accounting coursework offered, an attempt is made to achieve balance among the various areas of accounting. Students may achieve some degree of specialization within the field by proper selection of elective courses. The program permits substantial coursework in non-accounting areas, including mathematics and the behavioral sciences, for those who present prerequisites to graduate study in those areas. Under Plan A, a thesis, for which 3 quarter hours of credit are given, is written. The Department also offers the Plan B option. Within the 50-credit-hour requirement, the student must present a minor concentration in a field other than accounting. A final written examination and an oral examination which cover the major areas of accounting are held.

The Master of Arts degree is also offered for students having special interests not served by the Master of Accounting program.

MASTER OF ARCHITECTURE

The program of graduate studies in architecture leading to a Master of Architecture degree provides for mature candidates a framework of opportunities for individual research in architecture. The graduate curriculum contains a number of specialized study program possibilities for candidates seeking further professional development, for specialized architectural practice, or for preparation for careers in architectural education.

The one-year program provides opportunities for extending professional and scholarly development in several architectural fields including:

- Urban Design
- Architectural Design
- Environmental Design
- History of Architecture
- Architectural Education
- Protective Construction
- Architectural Structures
- Construction Technology
- Architectural Photography
- Architectural Photogrammetry
- Interdisciplinary studies combining graduate work in architecture with studies in any of the other departments of the University are encouraged. The diversity of graduate curricula and courses offered at the University and the ongoing University research effort underlie the interdisciplinary character of the graduate curriculum in architecture. The core of the graduate curriculum is a series of weekly seminars on the theory and practice of architecture. Each candidate's study program, in addition to the seminars, is prepared individually in consultation with the faculty. The curriculum emphasizes individual development through research in architectural and interdisciplinary fields and through special projects and studies within the candidate's area of specialization and interest. The general form of the graduate curriculum in architecture consists of three parts. The first part, which is required of all degree candidates, is the program of seminars in architecture. Conducted weekly, these seminars are intended as the forum for interaction between the specialized interests and study programs of those enrolled in the program. The second part consists of a number of graduate courses offered in the School of Architecture. Part three includes those graduate-level courses in other departments which may be taken as electives.

The Master of Architecture degree requires the completion of 45 credit hours of graduate study and normally the completion of a thesis. The number of credit-hours of interdepartmental seminar, design, special studies, thesis, and electives undertaken by each candidate is widely variable. The actual distribution of credit hours between parts two and three will be dependent upon the nature of the candidate's field of study.

Degree candidates may take up to 30 credit hours of elective coursework outside the School of Architecture in any of the other fields of graduate study offered at the University.

MASTER OF BUSINESS ADMINISTRATION

The basic objective of the M.B.A. degree program is to provide the depth and breadth of knowledge needed to manage modern organizations.

Those completing the program will have (1) acquired an awareness and understanding of administrative principles that have
enduring significance in a changing environment; (2) developed competence in a specialized area of organizational activity and a comprehension of its relationship to other organizational activities and to the economic and cultural environment; (3) achieved understanding of the utilization and application of research methodology; (4) attained competency in critical analysis and careful reasoning; and (5) strengthened their ability to communicate effectively.

In an environment characterized by changing socioeconomic dimensions and forces, the successful manager is one who is capable of perceiving problems and areas of change, devising alternative courses of action, specifying their consequences and evaluating utility, and making necessary choices. This requires that all students have a comprehensive understanding of effective management including (1) basic disciplines of economics and other social and behavioral sciences; (2) basic functional areas of the organization; (3) appropriate analytical tools and research techniques; (4) development and uses of managerial information; and (5) policy formulation and administration.

Some classes are of the seminar type and are generally held in rooms specifically designed for this purpose. A restricted number of electives may be chosen from courses open to undergraduates.

Both immediate and long-range opportunities for those with graduate degrees in business administration are great. Graduates move rapidly into managerial positions.

M.B.A. candidates have undergraduate degrees in all areas, with engineering, arts, and business predominating. Undergraduate degrees of registrants are from colleges and universities located in all sections of the United States and in many foreign countries. Graduates enter various fields of productive endeavor, including business management, research, consulting, college teaching, and governmental services.

To receive the Master of Business Administration degree, students must comply with the general requirements regarding residence, course of study, standard of work, examinations, and admission to candidacy, as prescribed for the Master of Arts and Master of Science degrees.

All applicants are required to take the Admission Test for Graduate Study in Business. Applicants also must have completed acceptable undergraduate study in certain basic business administration courses. Specifically, the prerequisites for the Master of Business Administration degree shall include an approved basic course in the following subjects: accounting, business law, corporation finance, economic statistics, economics, management, and marketing. A student with deficiencies in any of these prerequisites may make them up while enrolled in the Graduate School.

The M.B.A. program meets the needs of students with a general business management interest or those with more specialized interest in advertising, banking, credit, business logistics, finance, manufacturing, insurance, marketing, personnel management, real estate, research, and retailing.

A core of 35 hours covering the administration of business enterprises, the major functions of business, and research and controls is taken by all students. In addition to the core courses, a student takes at least 13 hours of work selected in consultation with his adviser. A thesis may be written by candidates for the Master of Business Administration degree, and credit granted for this thesis will not exceed 6 quarter hours. A final written examination covers the course of study.

For students with interests in specific fields, the Master of Arts degree program may be chosen.

MASTER OF BUSINESS ADMINISTRATION, COOPERATIVE PROGRAMS

The Master of Business Administration degree is offered in cooperation with the Department of Agricultural Economics and Rural Sociology in the College of Agriculture and Home Economics, as well as with the School of Allied Medical Professions in the College of Medicine. Faculty advisers for these programs include qualified persons from both business administration and the other departments concerned.

1. Agribusiness—A concentration in this area is available to those M.B.A. candidates whose interest is in studying the role and administration of agriculturally related organizations and institutions.

A thesis, for which credit shall not exceed 6 hours, is required along with the M.B.A. core requirements. Electives that cover the agricultural as-
pects of the program are selected from an approved list in consultation with an adviser from the Department of Agricultural Economics and Rural Sociology.

2. Hospital and Health Services Administration—A concentration in this area is available to those M.B.A. candidates who desire to accomplish the following twofold purpose:
   A. To obtain professional education basic to the administration of hospitals and health service organizations.
   B. To conduct research concerning the delivery of health care.

A prescribed program requires the M.B.A. core courses, specified hospital and health services administration courses, and a group of electives to be chosen from an approved list. A thesis is not required.

**MASTER OF CITY PLANNING**

The Master of City Planning degree (M.C.P.) requires completion of 90 credit hours of graduate study.

The primary emphases of the curriculum are on professional education for general urban planning and on fostering the development of patterns of analytic thought that will result in future contributions to the rapid evolution of the profession. Graduates are trained to hold responsible positions in the expanding programs of public and private planning agencies.

The core of the curriculum in the first year consists of three sequences of courses: (1) the physical elements of urban areas; (2) techniques of research and analysis in planning; and (3) introduction to the theory and history of planning. In the second year the core consists of two sequences: (1) workshop preparation of general urban plans, and (2) land-use controls and the administration of planning agencies. Preparation of a thesis is required, and usually scheduled throughout the second year.

The remainder of the curriculum, about one-third, is selected from planning-related courses in various departments of the University. These courses include the fields of urban geography, regional and resource development, engineering aspects, and urban studies in economics, sociology, and political science. A student may propose any combination of courses for this group that will fit his need, background, and objectives.

One-quarter of supervised experience on the staff of an approved planning organization is required. This experience is usually scheduled during the summer between the two years of required coursework. Students are assisted in making arrangements for this field experience.

**Admission Requirements.** Undergraduate preparation may be in any field. Most students have been prepared in a social science field (economics, geography, political science or public administration, sociology) or in a design profession (architecture, civil engineering, landscape architecture).

Each applicant should have at least an introduction to the two subjects of economics and statistics. Students who will complete this requirement early in the graduate program may be admitted.

Address inquiries to the Chairman, Division of City and Regional Planning.

**MASTER OF FINE ARTS**

The M.F.A. is offered as an advanced graduate program in the studio disciplines. It is a 90-credit-hour program, including the thesis. A minimum of 50 hours must be taken in one of the major fields of specialization (ceramics, graphics, painting, or sculpture), with 10 to 15 hours to be taken in any one of the remaining three graduate studio fields, 10 to 15 hours in one field, either art history or a field outside the Divisions of Art, and 10 hours of electives from any area outside the Divisions of Art.

An exhibition and a supplementary statement, as well as a satisfactory score on a two-hour examination, are called for to satisfy the thesis requirement.

Applicants who have received the M.A. degree in art prior to application may be allowed up to 45 hours of credit toward the M.F.A. degree as recommended by the reviewing committee, distributed as follows: up to 25 hours in the studio field of specialization, and up to 20 hours distributed among the related studio, academic, and elective requirements.

**MASTER OF SOCIAL WORK**

The Master of Social Work degree (M.S.W.) is the professional degree granted upon completion of two years of graduate study requiring the equivalent of six quarters...
of credit registration in class and field instruction. An individual or group research practicum is required. The practice of social work requires not only a substantial body of knowledge and specialized skill in working with people, but also self-discipline and attitudes that assure productive relationships for a meaningful solution to problems in social functioning. Consequently, candidates for the degree must evidence, in addition to academic qualifications, personal suitability for social work practice. This includes the ability to confront objectively the harsh realities of life while retaining compassion for the persons involved in those realities, convictions about human values in a free society, motivation to reduce human suffering and to strengthen social functioning, and a readiness to assume a disciplined professional role in social work practice.

The curriculum is designed upon the assumption that the graduates of the School of Social Work will practice primarily through a governmental or voluntary agency. It is expected that each graduate will give evidence of a sound social philosophy; of an understanding of social welfare services, their contribution to our society, of human behavior and its expressions; of competence in a social work method; and of some facility in research.

Each student preparing for the Master of Social Work degree takes the courses in the basic professional curriculum, which includes a sequence of courses in social welfare policy and services, in human behavior and social environment, in practice-method, and in research. Field instruction, an indispensable part of education for social work practice, is concurrent with the two-year classroom program. This individualized instruction in an agency teaching center both unifies and is an integral part of the total preparation of the student for professional social work practice.

A student presenting acceptable advanced credit from another accredited graduate school of social work may have the requirements of six quarters modified at the discretion of the student's adviser and with the concurrence of the director of the school. In no instance, however, shall the Master of Social Work degree be granted unless the student has completed 45 hours of graduate credit, including thesis, in residence at The Ohio State University, during which time not more than 30 hours of work may be in field instruction. The total program of the student shall be equivalent to that required of students who normally complete the full two years of professional study at this University.

A three-year program of graduate study, designed particularly for locally employed personnel who are not free to enter upon full-time study, is offered at both Columbus and Cincinnati. In this program a student may complete the required classroom courses of the first year in six quarters (two consecutive academic years). The second year of the program requires full-time enrollment.

COMBINED COLLEGE—GRADUATE PROGRAMS

COMBINED AGRICULTURE—GRADUATE PROGRAM

The Combined Agriculture—Graduate Program leads to the simultaneous award of a Bachelor of Science degree approved for the College of Agriculture and Home Economics and the master's degree in the area of specialization.

Any student in the Agriculture Honors Program who has passed 150 quarter hours of work including all the University Basic Education Requirements may apply to the Secretary of the College for admission to the Combined Agriculture—Graduate Program.

A student who is not in the Honors Program but has completed 150 quarter hours of work including all the University Basic Education Requirements with a cumulative point hour ratio of 3.5 or better may likewise apply to the Secretary of the College for admission to the Combined Agriculture—Graduate Program.

After verification of the applicant's eligibility for admission, the Secretary shall refer the applicant to the graduate committee of the department in the College of Agriculture and Home Economics in which the applicant seeks a master's degree for formal admission to the program. If the applicant is approved for admission by the departmental committee, the committee shall appoint an adviser who is a member of the Graduate Faculty.

The graduate adviser in consultation with the student will formulate a joint program of study which shall be submitted to the departmental graduate committee, the College Honors Committee, and the
Dean of the Graduate School for approval prior to its initiation. This combination program will generally consist of four or more quarters of study.

A student who has been admitted to the Combined Agriculture—Graduate Program may continue in the program as long as his quarterly point-hour ratio is maintained at a level consistent with the standards established by the Graduate School.

If a student does not meet the point-hour requirements, he may continue in a bachelor's degree program provided the requirements for the undergraduate degree program are satisfied. For Honors Program students, the College Honors Committee is charged with the responsibility of crediting completed courses equitably toward fulfilling such requirements. For students not in the Honors Program, the Assistant Dean for Academic Affairs is responsible for crediting completed courses equitably toward undergraduate requirements.

All requirements for the relevant master's degree must be satisfied, as well as the College requirements for the relevant bachelor's degree. Upon completion of the program, the student will be given a comprehensive oral examination conducted by the candidate's adviser and at least two other members of the Graduate Faculty chosen by the adviser with the approval of the graduate committee of the department in which the student is a master's candidate.

If the student passes the comprehensive examination and satisfactorily meets all other requirements, he will be recommended to the Graduate Council, the Executive Committee of the College of Agriculture and Home Economics, and the Faculty Council for simultaneous award of both the baccalaureate and master's degrees.

COMBINED ARTS AND SCIENCES—GRADUATE PROGRAMS LEADING TO THE BACHELOR OF ARTS AND THE MASTER'S DEGREES

In accordance with an agreement made between the Colleges of the Arts and Sciences and the Graduate School, it is possible for students of exceptional ability to secure both the Bachelor of Arts and the master's degrees by an extra quarter of study in addition to the regular four-year period ordinarily required for the degree Bachelor of Arts. By the proper planning of the sophomore and junior years of study, it is even possible to secure both of these degrees in four years.

Admission to the combination Arts and Sciences—Graduate course is limited to those students in the Colleges of the Arts and Sciences who have completed all junior division requirements and at least 151 credit hours of work with a point-hour ratio of not less than 3.5.

Students who are eligible and wish to apply for admission to this combination course must do so as soon as they have finished the junior year requirements. Such students should report to the Office of the Colleges of the Arts and Sciences for detailed information as to method of procedure.

COMBINED ADMINISTRATIVE SCIENCE—GRADUATE PROGRAM

The Administrative Science—Graduate Combination Curriculum leads to the simultaneous award of the B.S. in Business Administration and the master's degree in the area of specialization selected.

Students who have completed all of the requirements of the first- and second-year programs in business administration, or their equivalent, including all the University Basic Education Requirements, and have passed 150 quarter hours of work with cumulative point-hour ratios of 3.5 or better, may apply to the Secretary of the College for admission to the Administrative Science—Graduate Combination Curriculum. After verification of the fact that the applicant meets the requirements for admission to this curriculum, the Secretary shall refer the applicant to the graduate committee of the area of the College of Administrative Science in which the applicant seeks a master's degree for formal admission to this program. If the applicant is admitted by the area committee, it shall appoint an adviser who is a member of the graduate faculty.

The combination curriculum consists of four, five, six, or more quarters of full-time work, depending upon the time of admission to this program. The adviser in consultation with the student will formulate a program of study which shall be submitted to the area graduate committee and to the Dean of Graduate School for approval prior to its initiation. A program may consist of coursework or individualized study or a combination of the two.
All requirements for the relevant master's degree, including the writing of a thesis, must be satisfied. In addition, the approval of the Dean of the College of Administrative Science for the manner in which the degree requirements of that college are satisfied is required. These degree requirements include compliance with the relevant standards of the American Association of Collegiate Schools of Business. Upon completion of the program, the student will be given a comprehensive examination, both written and oral, conducted by the candidate's adviser and at least two other members of the graduate faculty chosen by the adviser with the approval of the graduate committee of the area in which the student is a master's degree candidate.

If the student passes the comprehensive examination and meets all of these requirements satisfactorily, the examining committee will recommend him to the Graduate Council, to the Executive Committee of the College of Administrative Science, and to the Faculty Council for simultaneous award of both the baccalaureate and master's degrees.

Three things may happen to unsuccessful candidates:

1. One who fails the comprehensive examination, or whose thesis is unsatisfactory, or who is deficient in some other requirement may be recommended for the baccalaureate degree only; and, depending upon the circumstances, a limited amount of graduate credit may also be granted.

2. A student who is unable to continue to completion of the master's degree component of the curriculum may, if his work is found satisfactory, be recommended for a baccalaureate degree alone, with no graduate credit granted.

3. A student whose work in this program is unsatisfactory may be transferred to a regular curriculum in the College of Administrative Science.

COMBINED ENGINEERING—GRADUATE PROGRAM LEADING TO A BACCALAUREATE DEGREE IN ENGINEERING AND THE MASTER OF SCIENCE DEGREE IN FIVE YEARS

In accordance with an agreement made between the College of Engineering and the Graduate School, it is possible for qualified students in engineering to secure both a baccalaureate degree in engineering and a master's degree in five years.

An engineering student registered in the five-year curriculum whose cumulative point-hour ratio on all college work undertaken at the end of his third year is at least 3.0 (or at least 2.7 under the condition that his cumulative point-hour ratio for work in the Professional Division is at least 3.0) may, upon application, be admitted to the master's degree program. A student so admitted may take approximately 15 hours of his graduate program in the fourth year on senior petition. Courses taken on senior petition in which the grade C is received will not be counted in the total hours required for the master's degree, but the C grade will be counted in determining the point-hour ratio in the Graduate School.

During the fifth year he must maintain double registration in the College of Engineering and the Graduate School, and complete the remainder (approximately 30 quarter hours) of his program for the master's degree. At least 15 credit hours, including thesis, must be taken in courses open only to graduate students. The Graduate-Engineering Advisory Committee must approve the student's program at the beginning of the fourth year and again at the beginning of the fifth year.

In certain departments, the student starts the combined program at the beginning of the fifth year and registers in the Graduate School for work leading to the master's degree.

In some departments, students on the Combined Bachelor's-Master's Program may elect to do their graduate work in the areas of engineering mechanics, mineralogy, or nuclear engineering, while completing the requirements for their undergraduate degrees in their respective departments. A student interested in a joint program should consult with his department chairman and with the chairman of the department in which he wishes to do graduate work.
Graduate Certificate Programs

Certificate programs are offered through the Graduate School and are open only to students who meet the general requirements for admission.

SPECIALIST IN EDUCATIONAL ADMINISTRATION

A certificate, Specialist in Educational Administration, is offered by the College of Education for students completing requirements of a planned program of post-master's degree graduate study in the area of educational administration. The Specialist's program is designed to provide further professional preparation for practicing educational administrators and for students seeking positions in educational administration.

For admission to this program, the candidate must:

1. Be enrolled in the Graduate School, as stated elsewhere in this catalog.
2. Have a master's degree from an approved college or university.
3. Have completed the requirements for administrative certification in Ohio or other states having comparable standards.
4. Have credentials and test data requested by a departmental selection committee.
5. Have the recommendations of two professors on the departmental selection committee, indicating that the applicant should be admitted to the program.

Upon admission to the program, at a conference with the Director of Graduate Studies in Education, the student will be assigned an adviser. The adviser and the student will prepare a planned sequence of work and study.

A minimum of 45 quarter hours of post-master's graduate work is required in addition to field experience. This work shall include 21 hours in educational administration, including the 12-hour practicum; 6 hours in research, including a research project, and a 3-hour research course; 6 hours in courses selected in departments other than the College of Education; 12 hours in professional education courses outside the area of educational administration; and field experience. One quarter of full-time residence or equivalent will be required. The completion of the program requirements may not be extended beyond seven years from date of initiation.

Other requirements include demonstrated professional competence through two years or more of successful educational administrative experience, one year of which may be directed internship, and a written report of an approved research project.

The student will take a two-hour written examination in educational administration prepared and read by the student's adviser and one other professor appointed by the Committee on Graduate Studies in Education, and a one-hour oral examination on the student's written research report conducted by the adviser and a professor appointed by the Committee on Graduate Studies in Education.

SPECIALIST IN LATIN AMERICAN AREA STUDIES (Pending)

The Certificate Program in Latin American Area Studies is designed to supplement work for an advanced degree in any one of the cooperating departments. It consists of courses in the Spanish and Portuguese languages, and courses dealing with one or more countries or regions of Latin America in five or more disciplines. The student will also be expected to acquire advanced competence in at least one professional area outside his major field of study. A master's thesis or essay in a Latin American topic must be completed before the certificate is obtained.

Requirements for the certificate are demonstrated competence to carry out advanced work in Spanish or Portuguese, and 45 quarter hours of work beyond departmental requirements for the master's degree or for a graduate-professional degree, including an essay or master's thesis on a Latin American topic. Language competence may be demonstrated through examination or successful completion of courses in Spanish 401, 402, and 403. A minimum of 30 hours of advanced coursework (500 level and above) must be distributed in five of the following fields: agricultural economics, anthropology, economics, geography, history, literature,
political science. Furthermore, the faculty will offer one interdepartmental seminar each year, dealing with selected Latin American topics. All certificate candidates will be expected to enroll in this seminar (899).

In order to ensure the candidate’s thorough competence in his discipline, the certificate will be awarded only upon completion of an advanced degree (master’s, Ph.D., or graduate-professional) or upon passing the General Examinations for the Ph.D. in lieu of the M.A. A student who enrolls only for the certificate program must already have a master’s degree or an advanced professional degree in a suitable discipline or must have passed the General Examinations for the Ph.D. The chairman of the Graduate Program on Latin American studies will appoint an adviser for any student who is not currently working for an advanced degree in one of the cooperating departments. The student’s academic adviser will be responsible for approving the certificate program.

SPECIALIST IN RUSSIAN AREA STUDIES

The Certificate Program in Russian Area Studies is designed to supplement work for an advanced degree in a department. It consists of courses in the Russian language, general courses in five or more disciplines as applied to Russia and the Soviet Union, advanced work in fields other than the major field, and an essay or master’s thesis on a Russian topic which must be completed during the period of work for the certificate.

Each candidate for the area certificate is expected to become thoroughly competent in his own discipline. To ensure such achievements the certificate is awarded only upon completion of requirements for an advanced degree (master’s, Ph.D., or graduate professional) or upon passing the General Examinations for the Ph.D. Students who enroll for the certificate program must already have an advanced degree in a suitable discipline or must have passed their General Examinations for the Ph.D.

A knowledge of the Russian language sufficient for use as a research tool is indispensable to advanced work. Each candidate must demonstrate the necessary competence in the language before he may register for required work in a research course, that is, before beginning his second year. This requirement can be met by examination or by passing one of the advanced Russian courses, Russian 609, 610, 611, with a grade of B or better. Candidates who enter with 20 quarter hours of Russian can normally expect to complete their language requirements by the end of the first academic year. Those who enter with no knowledge of Russian must embark on study of the language immediately, and must continue intensive study during the following summer. The candidate must maintain a grade of B or better in such language courses.

The certificate is predicated on 45 quarter hours of work beyond the normal departmental master’s requirements. A minimum of 30 hours must be distributed in at least four areas outside the candidate’s major field, and at least 9 of these 30 hours must be taken above the 600 level. Courses for which undergraduate credit has been earned may be used to satisfy distribution requirements, but may not be included in the total of 45 hours required for the certificate. The chairman of the Graduate Committee on Russian Area Studies must approve the program of study which the student has worked out with his departmental adviser. Students who are not candidates for advanced degrees but who have registered for work in the certificate program will be assigned advisers by the chairman of the Graduate Committee on Russian Area Studies. Courses may be selected from the Departments of Economics, Geography, History, Political Science, Slavic Languages and Literatures, and Sociology.

SPECIALIST IN TRANSLATION FROM THE RUSSIAN SOCIAL SCIENCES

The Certificate Program for Translators in the Social Sciences, which includes both academic and practical work in translation from the social sciences, is intended to train professional translators. A candidate must meet the normal admissions requirements of the Graduate School, must have an undergraduate major (or the equivalent) in one of the social sciences, and must present a minimum of 25 quarter hours of Russian for entrance.

The program, which may be completed in one academic year, includes language training, courses in applied linguistics,
English composition, translation techniques, and a survey of the social sciences in the USSR. During the first two quarters candidates will spend two hours daily in the translation laboratory working on individually supervised projects under conditions approximating those in an actual job situation. In the third quarter these sessions will be increased to three hours daily. Students must maintain at least a 3.0 average for all coursework, and must complete the third-quarter translation laboratory program with a grade of B in order to receive the certificate.

Candidates must complete the sequence Russian 513, 514, 615 (Translation Techniques I, II, & III). In 513 and 514 students will translate from the social sciences, and in 615 will translate materials from Soviet fiction in order to emphasize the contrast in translating from the social sciences and from the belles lettres. Students will normally complete Russian 630 (Applied Linguistics for the Russian Major) and Russian 640 (Contrastive Structures of Russian and English).

Courses in writing and English usage form an integral part of the training program. The translator must be accurate, but he must also be able to present his material in good, clear, precise, readable form. English 301 and English 570 may be used to meet this requirement.

In order to acquaint the translator with the entire field of the social sciences in the USSR, candidates for the certificate must enroll in Political Science 631, which is an introduction to the bibliography and methodology of the social sciences in the USSR.

TEACHING OF ENGLISH TO SPEAKERS OF OTHER LANGUAGES

The Certificate Program in Teaching English to Speakers of Other Languages, (TESOL), is open to students regularly enrolled in related graduate degree programs such as those of English, linguistics, and speech. Upon completion of both the graduate degree program in which they are regularly enrolled and the additional requirements of the Program in TESOL, students will be granted the certificate in TESOL in addition to their regularly earned graduate degrees. The general requirements of the Program in TESOL are explained elsewhere. See Special Interdisciplinary Graduate Programs, page 101.

Doctoral Degree Programs

Graduate programs leading to the Doctor of Philosophy degree are offered by many departments at The Ohio State University. A student's program of study is administered by his major department and is subject to approval of the Graduate School. Variations exist in requirements of the several doctoral programs offered by respective departments and colleges. It is important for the student to become acquainted with the specific requirements of his department and college since he must satisfy them as well as certain University requirements. The following description covers University requirements and will serve as a general guide.

PROGRAM OF STUDY

The program of study to be pursued for the Ph.D. degree will be arranged with each student by his adviser, but the choice of work may be reviewed by the departmental graduate committee and the Executive Committee.

Work in other departments may be scheduled according to the needs of the individual student. In all cases, the aim will be a reasonable concentration and breadth of study, designed to foster both the power of productive scholarship and a knowledge of the specialty in relation to allied branches of learning.

RESIDENCE AND CREDIT-HOUR REQUIREMENTS

The residence and credit-hour requirements for the Ph.D. degree apply to graduate work taken after the master's degree or after the first 45 hours of graduate credit when the master's degree is not taken.

The minimum credit-hour and residence requirements are as follows:

1. Forty-five graduate credit hours taken before admission to candidacy for the Ph.D. degree of which at least 25 hours must be taken at this university under supervision of its graduate faculty.
2. An additional 45 graduate credit hours, 20 hours of which must be taken after admission to candidacy in not less than two quarters of registration at this university.

3. A period of concentrated graduate study during three of four consecutive quarters with at least 10 graduate credit hours a quarter. These may be counted as part of the minimum of 45 credit hours taken at this university.

A student must be registered in the Graduate School during the quarter in which he expects to receive the Ph.D. degree.

ACADEMIC STANDARDS

A graduate student doing acceptable work toward the Ph.D. degree is expected to maintain an average of B or better in all graduate credit courses. If at any time after 15 hours of graduate credit a student's record falls below the above requirements, the departmental graduate committee will be requested by the Dean to review his record and make a recommendation to the Executive Committee to determine whether the student should be put on probation or be denied registration as a regular student.

FOREIGN LANGUAGE REQUIREMENTS

A student at the beginning of his doctoral program must demonstrate a satisfactory proficiency in English. The Graduate School has no foreign language requirement for graduate degrees; each department or program committee sets its own requirements. For additional information, an inquiry should be addressed to the appropriate graduate committee chairman.

The language departments offer special courses for graduate students who wish to acquire a reading knowledge of French, Spanish, German, or Russian and, for some Ph.D. programs, satisfactory completion of certain of these courses will satisfy a language requirement.

The student is advised to plan his language program for the Ph.D. degree as soon as he decides to start working toward the degree. He should consult his adviser and the appropriate persons in the language departments concerning his program. The language departments give placement tests that will assist the student in choosing an effective procedure in meeting the language requirements.

GENERAL EXAMINATION AND ADMISSION TO CANDIDACY

Without limitation to courses taken, a student working toward the Ph.D. degree is required to pass a written comprehensive examination on the fundamentals of the entire field in which he has elected to specialize. This written examination must be followed by an oral examination. The purpose of such a general examination, written and oral, is to determine the adequacy of the student's knowledge in his field of specialization and related subjects and of his ability to pursue independent research.

REQUIREMENTS AND PROCEDURE

The student must be registered during the quarter in which he expects to take the General Examination.

Before admission to candidacy, the student must have completed a minimum of 90 quarter hours of graduate coursework beyond the baccalaureate degree.

When the adviser decides that the student is ready for the General Examination, he will notify the Office of the Graduate School in writing, at the same time suggesting the personnel of the examining committee for approval by the Dean.

The selection of a time and place for the examination will be entirely in the hands of the adviser, but he is expected to consult with the various members of the committee before setting a time for the examination.

COMPOSITION OF THE EXAMINING COMMITTEE

The examining committee is made up of not fewer than five faculty members in the student's field of specialization and in cognate fields. The student's adviser serves as chairman, and one faculty member outside the student's department is appointed by and represents the Dean of the Graduate School. All members must be approved to serve on Ph.D. committees, and the representative of the Dean of the Graduate School must be approved to advise Ph.D. candidates.
**Summary of Requirements for Degree**

**Bachelor of Science in Ceramic Engineering**

**College Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cer. E</td>
<td>301, 423, 424, 425, 426, 510, 511, 531, 551, 552, 611; 632, 633, or 634; 529 or 613; 513 or 612; 780 or 791</td>
</tr>
<tr>
<td>Chem.</td>
<td>204, 206, 321</td>
</tr>
<tr>
<td>Elec. E</td>
<td>500</td>
</tr>
<tr>
<td>Eng. Gr</td>
<td>110, 200</td>
</tr>
<tr>
<td>Eng. Mech.</td>
<td>210, 420</td>
</tr>
<tr>
<td>Engr.</td>
<td>101, 103, 305</td>
</tr>
<tr>
<td>Math.</td>
<td>151, 152, 153, 254, 255, 425</td>
</tr>
<tr>
<td>Mineral.</td>
<td>414, 605</td>
</tr>
<tr>
<td>Physics</td>
<td>181, 132, 135</td>
</tr>
<tr>
<td>Basic Education Requirements</td>
<td>Including Economics 201</td>
</tr>
<tr>
<td>Technical Electives</td>
<td></td>
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</tbody>
</table>

**University Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Phys. Ed</td>
<td>101, 102, 103</td>
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<tr>
<td>Health Ed</td>
<td>101</td>
</tr>
<tr>
<td>National Defense Option</td>
<td>6-12</td>
</tr>
<tr>
<td></td>
<td>10-16</td>
</tr>
</tbody>
</table>

2. Technical electives are chosen with the guidance of a staff counselor.

**GRADUATE PROGRAM**

Graduate programs in ceramic engineering include advanced experience in ceramic science and engineering, broadening through related disciplines such as mineralogy, metallurgy, engineering mechanics, mathematics, chemistry, and physics, and a significant independent research or engineering effort. The basic objectives are the development of graduates having special aptitudes and motivations for the solution of ceramic and materials problems, and the advancement of ceramic science. The graduate programs are designed to encourage self-reliance and individual development, although a faculty adviser provides counsel in the pursuit of both academic and research programs.

Programs may be oriented toward fundamental science, applied science, or engineering analysis, with thesis or dissertation problems involving ceramic or composite materials, reactions, behaviors, mechanisms, processes, systems, or products. Master's programs tend to emphasize engineering and engineering development, whereas doctoral programs are commonly more science-oriented, particularly with respect to the dissertation effort. However, either type of program may emphasize engineering or science.

Graduate enrollment in ceramic engineering includes baccalaureate graduates from various schools having ceramic or ceramic engineering curricula; students from other basic engineering disciplines are encouraged in view of the broad scope of ceramics. Most graduate students are supported financially through fellowship or other appointments, which follow in most cases a full-time graduate effort.

Specific subjects or fields of knowledge required in the minimal master's and doctoral programs: Candidates for all graduate degrees in ceramic engineering are required to present or obtain adequate credits in mathematics through calculus, college physics, general and physical chemistry, crystallography, and engineering mechanics. Such degree candidates must also satisfy in a manner approved by the departmental graduate committee the requirements of basic courses in ceramic engineering as needed. In addition, each degree candidate will complete a program of advanced study in ceramic engineering, including research approved for the thesis or dissertation.
by University Microfilms. Reprints of the abstracts may be purchased.

All doctoral dissertations accepted in partial fulfillment of degree requirements will be microfilmed by University Microfilms, Inc., of Ann Arbor, Michigan. When the candidate submits his dissertation and abstract to the Office of the Graduate School, he will sign an agreement with University Microfilms which gives this firm the right to make and sell microcopies of his dissertation. This does not apply to dissertations and abstracts which are sealed; however, the fees must be paid since the dissertation will be microfilmed when it is declassified. Positives or enlarged photoprints may be obtained at modest cost. Microfilmed dissertations may be copyrighted.

The copies of the dissertation will be bound and deposited in the University Library.

Fees for the above procedures will be assessed as follows: binding of dissertation copies, microfilming of dissertation, and printing and publishing of abstract, $35; optional copyright of dissertation, $7 plus the cost of two microfilm copies; abstract reprints, $12 per hundred (optional).

**FINAL EXAMINATION**

The Final Examination is held after approval of the dissertation and must be scheduled within seven years of the passing of the General Examination. The examination is oral and deals intensively with the portion of the candidate’s field of specialization in which his dissertation falls, though it need not be confined exclusively to the subject matter of the dissertation. A written examination also may be required at the discretion of the department concerned.

The Final Examination shall be conducted by a committee consisting of the candidate’s adviser (who shall act as chairman) and such other examiners as the Dean shall designate after consultation with the candidate’s adviser, and shall include at least one person who is not a member of the department directly concerned. The outside member of the committee shall be a Graduate Faculty member who is approved to advise candidates for the Ph.D. degree in his own department.

The time and place of the examination shall be set by the chairman of the examining committee after consultation with the other members of the committee.

The Office of the Graduate School shall be notified promptly of the results of the Final Examination. In order to be considered satisfactory, the report of the examining committee must be unanimous. If there is a dissenting vote, the case is referred to the Executive Committee for appropriate action.

**TIME LIMIT**

If a candidate fails to complete his dissertation and final examination within seven years after the General Examination, his admission to candidacy will be canceled.

**SUMMARY OF REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE**

1. Completion of minimum of 135 quarter hours of graduate coursework (including credit for dissertation research) beyond the baccalaureate degree.

2. A period of concentrated graduate study beyond the master’s degree during three of four consecutive quarters with at least 10 graduate credit hours a quarter.

3. Successful completion of a general comprehensive examination no later than two quarters prior to the date on which the candidate expects to receive the degree.

4. Presentation of an acceptable dissertation embodying the results of an original investigation.

5. The passing of a final oral examination on the dissertation and on the immediate field of investigation.
Fields of Study and Degrees Offered

ACCOUNTING

Prof. Elzy V. McCollough, Chairman, 452 Hagerty Hall, 1775 South College Road


Graduate degrees offered: Master of Arts, Master of Accounting, Doctor of Philosophy.

Admission requirements not stated in the general Graduate School section: The student must have a background in elementary economics and in elementary accounting and must secure the approval of the department. A score on the Admission Test for Graduate Study in Business must be submitted before admission can be considered. Well-qualified students may be admitted directly to the Ph.D. program without a master's degree.

Specific fields of knowledge required in the minimal master's program: The two-year Master of Accounting program includes work in business administration, economics, and statistics, as well as a concentration in accounting. Students with undergraduate majors in business administration or accounting may substantially reduce the time required.

Specific fields of knowledge for which all doctoral students are held responsible: General examinations cover the fields of accounting, economic theory, and one other field: a behavioral science (such as psychology or sociology), mathematics, applied economics, or business administration. The examination in accounting includes accounting theory and research methodology, in addition to subjects at an advanced level, such as managerial accounting or financial accounting. The economic theory requirement includes micro- and macro-economic analysis at the graduate level. Competence in mathematics and computers must be demonstrated by recent coursework. There is no foreign language requirement.

Principal fields for specialization and research: Coursework in the Master of Accounting program is designed to achieve balance among the professional areas of accounting. Research opportunities for Ph.D. students are available in a broad range of accounting areas. Special attention is given to relationships between accounting and other disciplines, particularly economics and other behavioral sciences in the Ph.D. program.

Significant library or research facilities available to students in accounting: The Division of Research in the College of Administrative Science furnishes professional assistance in the research activities of faculty and graduate students. Facilities include a complete installation of modern computing equipment and a specialized research library, both of which are available to all graduate students in accounting.

AERONAUTICAL AND ASTRONAUTICAL ENGINEERING

Prof. G. L. Von Eschen, Chairman, 328 Civil Aeronautical Engineering Building, 2036 Neil Avenue.

Prof. R. Edse, Graduate Committee Chairman.

Professors O. R. Burggraf, R. Edse, B. E. Gatewood, J. D. Lee, T. Y. Li, G. L. Von Eschen; Associate Professors Cecil D Bailey, F. M. Mallett, R. M. Nerem, S. L. Petrie, Assistant Professor G. M. Gregorek.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Specific fields of knowledge required in the minimal master's program: A typical program consists of 25 to 30 hours in aeronautical and astronautical engineering, 12 to 15 hours in advanced mathematics, 6 to 9 hours in modern physics or another related minor, and 6 hours of research for the thesis under Plan A. The student may specialize in aerodynamics, compressible flows, plasma flows, viscous flows, combustion, propulsion, aerothermochemistry, structures aeroelasticity, or aerothermostress. Alternate Plan B provides for the granting of the M.S. degree without a thesis. Instead of devoting 6 credit hours to research culminating in a thesis, a student may register for 6 additional credit hours of formal coursework plus 6 credit hours of research, the result of which must be presented in an informal report.

Specific fields of knowledge for which all doctoral students are held responsible: Fol-
lowing the work for a Master of Science degree or, if the latter degree is not earned after 51 hours of graduate work beyond the bachelor's degree, the student must take a minimum of 51 hours of advanced graduate courses before he can be admitted to the general examinations. This coursework consists of 20 to 25 hours in aeronautical and astronautical engineering, 15 hours in advanced mathematics, and 9 to 12 hours in physics or any other minor approved by the adviser.

Specific foreign languages accepted or required: Each student planning to obtain a Ph.D. degree in the Department of Aeronautical and Astronautical Engineering must demonstrate proficiency in reading technical literature in a foreign language in the field of his specialization before the general examination. The preferred languages are Russian, German, and French; however, under special circumstances, an adviser may approve the substitution of another language. The requirement may be satisfied by means of a proficiency examination to be given by the appropriate language department or through the satisfactory completion of at least 8 quarter hours of college-level foreign language courses with a grade of C or better.

The student in consultation with his adviser should plan his language program for the Ph.D. degree early in his graduate school career.

Principal fields for specialization and research: Low speed aerodynamics, supersonic and hypersonic aerodynamics, hypervelocity flows, plasma flows, viscous flows, shock wave—boundary layer interactions, superaerodynamics, combustion, propulsion, energy conversion, detonation, mechanism of mixed flows (solid particles and gases), spectroscopic analysis of hot reacting gases, real gas effects in fluid flows, geophysical fluid dynamics, aerothermostructures, aerelasticity, nonlinear structures, and plastic behavior of structures for aircraft and spacecraft.

Significant library or research facilities available to students in this department: A departmental library of 29,000 volumes, conveniently located in the Civil-Aeronautical Engineering Building is shared jointly by the Departments of Aeronautical and Astronautical Engineering and Civil Engineering. Additional libraries of particular significance to graduate students in the Department of Aeronautical and Astronautical Engineering include the Main Library and other libraries in the Departments of Chemistry, Physics, Mathematics, Electrical Engineering, Mechanical Engineering, and Engineering Mechanics.

Graduate-level research involving experimental studies is conducted in the Aeronautical and Astronautical Research Laboratory. Facilities for aerodynamic research include low speed, transonic, supersonic, and hypersonic wind tunnels up to 12 inches in diameter, plasma generators, arc-driven shock tubes, and an analog computer. Rocket research facilities include test cells for studies on jet engines, detonation tubes, shock tubes, spectrographs, and high-pressure combustion chambers. Aerothermostructures research facilities include stress measuring equipment, a temperature controller and power unit for thermal stress studies, shakers, and static test equipment.

AGRIBUSINESS

Graduate degree offered: Master of Business Administration

For details of the M.B.A. specialization in agribusiness, cooperatively administered with the Department of Agricultural Economics and Rural Sociology, see page 28.

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

Prof. David H. Boyne, Chairman, Agricultural Administration Building, 2120 Fyffe Road


Graduate degrees offered: Master of Science, Doctor of Philosophy

This department offers graduate training in the fields of agricultural economics and rural sociology. Specialty areas within agricultural economics are marketing, farm management and appraisal, finance, policy,
fundamental science and mathematics. Following this basic grounding, more advanced courses treat the following:

1. Structural design.
2. Transportation facilities.
3. Water supply and waste water disposal facilities.
4. Foundation and earthwork engineering.
5. Photogrammetric and geodetic engineering.
7. Mining engineering.

A student thus becomes well versed in a number of fundamental engineering disciplines. In addition to this broad training, a student is afforded the opportunity to specialize in the field of his choice during the final year of the curriculum. In this manner the decision as to a particular area of civil engineering is deferred until the student has become acquainted with the major subdivisions of the entire field.

Civil engineering graduates are found in responsible engineering and administrative posts in industry and government. Others become consultants in planning, design, or construction of engineering projects, or in specialized fields where the application of research to the solution of practical problems is important.

The requirements of the curriculum in civil engineering consist of the following:

1. Sufficient courses in Basic Education to provide a total of 30 credit hours. These total hours must include 5 credit hours of Econ. 201 or equivalent.
2. 10 to 16 hours of University requirements (health and physical education, and National Defense Option).
3. 163 hours of specified and elective engineering or related courses as listed below.

The following curriculum and list of minimum requirements for the degree Bachelor of Science in Civil Engineering is effective for all students entering the University Summer Quarter 1969, or thereafter, without prior college credit. Students who began their work in the five-year curriculum delineated in the 1968-69 College of Engineering catalog, prior to Summer Quarter 1969, may continue and complete degree requirements under that curriculum. However, if students wish to complete degree requirements under the four-year curriculum below, they should obtain, in the Department Office, guidance regarding available transition plans.

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>AUTUMN</td>
<td>Math. 151</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Calculus and Analytic Geometry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eng. 101</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Composition and Reading</td>
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<tr>
<td></td>
<td>University College 100</td>
<td>1</td>
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<td></td>
<td>Freshman Survey</td>
<td>1</td>
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<td></td>
<td>Phys. Ed. 101</td>
<td>1</td>
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<tr>
<td></td>
<td>National Defense Option</td>
<td>ROTC or Academic</td>
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<thead>
<tr>
<th>Quarter</th>
<th>Course</th>
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<tbody>
<tr>
<td>WINTER</td>
<td>Math. 152</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Calculus and Analytic Geometry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eng. 102</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Composition and Reading</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physics 131</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Particle Systems and Electrodynamics</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Phys. Ed. 102</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Health Ed. 101</td>
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<td></td>
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<td>ROTC or Academic</td>
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<tr>
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<td>Calculus and Analytic Geometry</td>
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<td>Eng. Gr. 110</td>
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<td>General Engineering Graphics</td>
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<td>Physics 182</td>
<td>5</td>
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<td></td>
<td>Waves and Quanta</td>
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<td>Phys. Ed. 103</td>
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<td>National Defense Option</td>
<td>ROTC or Academic</td>
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**SECOND YEAR**

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<tr>
<td>AUTUMN</td>
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<td>Calculus and Analytic Geometry</td>
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<td></td>
<td>Physics 133</td>
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<tr>
<td></td>
<td>Particle Systems and Electrodynamics</td>
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<td></td>
<td>Eng. Gr. 200</td>
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<td>Computer Utilisation</td>
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<td>Civil E. 401</td>
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**THIRD YEAR**

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lated disciplines. Plan B is available for those who choose additional coursework, rather than a thesis, and have approval of their advisers.

Specific fields of knowledge for which all doctoral students are held responsible: In addition to major work in agricultural education, at least two other areas of specialization must be included. These areas may be in agriculture, education, or related disciplines. At least 9 hours of research and statistics are also required. The program is planned for each candidate with an advisory committee of which the Department adviser is chairman.

Foreign languages required: None.

Significant library or research facilities available to students in this department: The Center for Research and Leadership Development in Vocational and Technical Education, located on the campus, conducts special seminars and workshops involving personnel throughout the country. Also, the state supervisory and administrative staffs in vocational agriculture and cooperative extension are located in Columbus, where they are available for sharing and participating in programs.

AGRICULTURAL ENGINEERING

Prof. William H. Johnson, Acting Chairman, 105 Ives Hall, 2073 Neil Avenue

Graduate degrees offered: Master of Science, Doctor of Philosophy

Specific fields of knowledge required in the minimal master's program: A minimum of 15 hours of advanced basic science, such as mathematics, physics, or biology is required. It must include 6 hours of 500-level or higher mathematics, and one graduate-level three-course sequence in the area of specialization. Subject to the approval of the Departmental graduate committee, a student with appropriate qualifications may elect the nonthesis option (Plan B) for the master's degree.

Specific fields of knowledge for which all doctoral students are held responsible: A doctoral candidate must have a minimum of 53 hours of graduate-level courses in mathematics, chemistry, physics, engineering, and philosophy of science. The major shall consist of three agricultural engineering advanced courses, credit in seminar, and research credit. Doctoral students are expected to have at least one quarter of teaching experience. The Department has no foreign language requirement.

Principal fields for specialization and research: Aerosol and fine particle physics including turbulent diffusion; animal and environmental response and control; agricultural production and processing systems; drainage, irrigation, soil erosion control, hydrology of agricultural watersheds, flow of fine sediment through porous media; heat, mass, and momentum transfer in biological materials; engineering properties of biological materials; food processing design and control; harvesting of field crops; machine manipulation of plants and their environment; soil-plant relationships; agricultural pollution control; and systems engineering applied to agriculture.

Significant library or research facilities available to students in this department: In addition to the campus libraries are those of the Ohio Agricultural Research and Development Center and the United States Department of Agriculture at Wooster. Research facilities include the porous media, aerosol mechanics, animal environment laboratories, and other small laboratories at Wooster, United States Department of Agriculture Hydrologic Research Station at Coshocton, and several agricultural development center experimental farms. Laboratory and research facilities, including a laboratory for agricultural pollution studies, an analog computer, and a multichannel data tape recorder, are also available in the Department at Columbus.

AGRONOMY

Prof. Garth W. Volk, Chairman, 108 Townshend Hall, 1885 Neil Avenue
Graduate degrees offered: Master of Science, Doctor of Philosophy.

The graduate program in agronomy is, in part, defined by students and their advisers, a philosophy of graduate education, a wide selection of graduate courses, library and research facilities for conducting research, and a graduate committee and a mechanism for planning and executing the entire program. Available specialties in the Department permit the student to choose his area of greatest interest. He and his adviser prepare and submit to the graduate committee a proposed course program to realize his objectives, interests, and capabilities. A course on research principles and techniques is offered for all new graduate students, and a graduate seminar on current topics is provided for the benefit of all graduate students and faculty.

Admission requirements not stated in the general Graduate School section: Completion of the following requirements for the B.S. degree in agricultural science in agronomy at The Ohio State University is recommended: biological sciences (20 hours), chemistry (23), geology (5), physics (15 for soils, 10 for crops majors), mathematics (15), and agronomy (39).

Specific subjects required in the minimal master's program: Although much emphasis is placed on a rounded program in supporting fields of chemistry, mathematics, physics, botany, geology, mineralogy, biochemistry, genetics, and statistics, the following courses are generally required: statistics, agronomy seminar, and research principles and techniques.

The Plan B thesis option is permitted under certain conditions. A request for use of the option is considered on its merits by the graduate committee of the Department. The Plan B option might be favored for the occasional student on a terminal degree program where additional courses may be more important than research to his training, or the occasional student with much research experience, who is working toward the doctoral degree.

Specific fields of knowledge for which all doctoral students are held responsible: All doctoral students in agronomy are held responsible for the basic physical and biological sciences and for fields of knowledge, such as plant physiology and statistics, which are requisite to an understanding of agronomy. Beyond these general requirements, the student is held responsible for other fields pertinent to his specialty; i.e., physical chemistry for the soil chemist and genetics for the plant breeder.

Foreign language requirements: Foreign language is not a requirement for either the M.S. or Ph.D. degree. However, a foreign language option may be chosen in lieu of the Ph.D. program study option of 12 to 15 hours required in an allied, supportive, or culturally broadening field. If the language option is chosen, the student may elect to take French, German, Spanish, or Russian at the thorough reading knowledge level of proficiency. In the case of German or Russian, he may elect to take dictionary reading knowledge level of proficiency in this and one other language. The required level of proficiency may be demonstrated by a mark of A or B in a special language course or by passing an examination administered by the appropriate foreign language department.

Principal fields for specialization and research: Students in soils may specialize in soil physics, soil chemistry, soil microbiology and biochemistry, soil genesis and classification, soil fertility, and soil conservation. Students in crops may specialize in crop production and management, seed production and processing, weed control, turf establishment and management, and plant breeding and genetics.

Significant library or research facilities available to students in this department: An adequate library including current issues of many journals appropriate to agronomy is maintained. Research facilities and equipment include laboratories, growth chambers, greenhouses, experimental fields, X-ray diffraction apparatus, multichannel scintillation counter, liquid scintillation counter, infrared spectroscope, and multichannel recording emission spectograph.

ANATOMY

Prof. Grant O. Graves, Chairman, 414 Hamilton Hall, 1645 Neil Avenue
Prof. Ronald St. Pierre, Graduate Committee Chairman
Graduate degrees offered: Master of Science, Doctor of Philosophy

The Department is interested in preparing qualified students to pursue careers in teaching and research. In addition to the required courses, the program provides experience in creative scientific thought, problem-solving, critical analyses, and syntheses of anatomical knowledge. Opportunities are provided to permit students to become familiar with the value and application of a wide range of scientific instruments used in anatomical investigations, and to develop proficiency in the oral and written presentation of facts and principles through teaching and seminar activities.

Admission requirements not stated in the general Graduate School section: The student must have a general biology background.

Specific fields of knowledge required in the minimal master's program: The student's training or coursework should include embryology, gross anatomy, histology, neurology, and anatomical methods or their equivalents. After completion of their coursework in the four general areas of anatomy, usually at the end of the first year, all graduate students are required to pass comprehensive oral and written examinations to qualify for further graduate study. The final examination for the master's degree shall include material derived from these areas of anatomy. Plan A and Plan B are both offered. The student must pass a written examination requiring 3 hours and an oral examination requiring 2 hours under Plan B. A student need not repeat coursework taken elsewhere provided he can show proficiency in the areas covered. Non-Departmental courses should be taken in one or more of these related fields: physiological chemistry or biochemistry, physiology, zoology, or anthropology.

Specific fields of knowledge for which all doctoral students are held responsible: All students must have passed the oral and written qualifying examination and must demonstrate proficiency in the General Examination in selected areas from two of the following fields: histology, embryology, gross anatomy, and neuroanatomy. At least 20 hours of work in one or more of the allied medical sciences (biochemistry, physiology, pathology, or zoology) are also required.

Foreign language requirement: Prior to admission to the General Examination, each candidate must have met the foreign language requirement in one of the following ways: passed a dictionary examination of selected scientific passages in a language approved by the foreign language adviser, received certification by the Educational Testing Service, completed the 572 course in an approved foreign language with a grade of A or B, or provided evidence of having met the foreign language requirement of another graduate school.

Principal fields for specialization and research: The Department offers the following major areas: general histology (including hematology, histochemistry, tissue culture, cytogentetics, autoradiography, electron microscopy); embryology (both avian and mammalian), gross anatomy, and neuroanatomy studies.

Significant library or research facilities available to students in this department: Research facilities are available for histochemistry; electron microscopy; histology; tissue culture; autoradiography, phase, flourescent, and interference microscopy. Dissection and radiologic anatomy facilities and stereotactic apparatus for neuroanatomy studies are available.

ANCIENT HISTORY AND LITERATURE

See page 99.

ANESTHESIOLOGY

Prof. William Hemelberg, Chairman, 632 University Hospital

Professors Robert W. Gardier, William Hamelberg; Assistant Professors Jerome L. Gauthier, Corliss M. Welch.

Graduate degree offered: Master of Science

In addition to standard Graduate School requirements, the candidate must have an appointment as a fellow or resident in the Department's three-year training program. A minimum of 45 hours of graduate credit is required with 20 or more of these hours obtained outside the Department.

Course content for credit hours within the Department consist of didactic and clinical instruction in the broad field of
anesthesiology. The didactic instruction covers anesthetic agents and techniques, mechanism of anesthetic action, inhalation therapy, cardiopulmonary resuscitation, blood banking, related basic physiology and pharmacology, and management of pain. In addition, the candidate prepares material for seminars which are held twice monthly. The clinical instruction offers the candidate the opportunity to apply, under direct supervision, the material presented in lectures.

Credit hours outside the Department are obtained in areas closely related to anesthesiology. The candidate takes courses in pharmacology and physiology, as well as a course in statistical methods and journalism.

The above are completed in the first two years of the program, with the third year being devoted to individual research and submission of a thesis.

ANTHROPOLOGY

Prof. Thomas R. Williams, Chairman, 13 Page Hall, 65 South Oval Drive
Professors Erika Bourguignon, Leo Estel, Thomas Williams; Associate Professor Robert Dentan; Assistant Professor Edwin Hall; Adjunct Associate Professor Raymond Baby.

Graduate degrees offered: Master of Arts, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: Ordinarily a student with an undergraduate major in anthropology may begin graduate study of anthropology without restrictions. Students with inadequate preparation will be required to make up deficiencies.

Specific subjects or fields of knowledge required in the minimal master's program: The master's degree candidate is expected to complete seminars and courses designed to develop research skills and comprehension of general anthropology including the fields of ethnology, cultural anthropology, physical anthropology, prehistory, and anthropological linguistics. A comprehensive examination is required of all master's candidates.

Specific fields of knowledge for which all doctoral students are held responsible: All Doctor of Philosophy students are expected to exhibit intensive preparation in one of the specialized fields of anthropology and to demonstrate their general familiarity with concepts and data in the social and natural sciences and humanities areas most closely related to their fields of specialization in anthropology. All doctoral candidates must successfully complete examinations on their special fields of knowledge and allied areas and will be expected to exhibit mastery of basic anthropology.

Specific foreign languages accepted or required: Students specializing in foreign culture areas will be permitted to choose languages that will serve as field research tools.

Principal fields for specialization and research: The principal fields for research specialization are ethnology, cultural anthropology, physical anthropology, prehistory, and anthropological linguistics. Culture area specialities are Oceania, South and South East Asia, Africa, Europe, Latin America, and North America.
Significant library or research facilities available to students in this department: The main library and the Library of the Ohio Historical Society house collections in specialized fields in anthropology. The facilities of the Ohio State Museum are available by permission of the Curator, Director, and Department Chairman.

ARCHITECTURE

Prof. Elliot L. Whitaker, 106 Brown Hall, 190 West 17th Avenue


Graduate degree offered: Master of Architecture

Admission requirements not stated in the general Graduate School section: The minimum requirements for admission to the graduate curriculum are a Bachelor of Architecture degree from an accredited school of architecture and a minimum point-hour ratio in all undergraduate work taken prior to the baccalaureate degree, as established by the Graduate School.

Applicants for admission to the program of graduate studies in architecture are not required to take the Graduate Record Examinations. However, an applicant whose cumulative point-hour ratio is below the Graduate School minimum must take the Aptitude Test Portion of the Graduate Record Examination. A satisfactory score will provide valuable evidence of the applicant's qualifications to undertake graduate studies. Applicants with less than the minimum requirements for admission may be admitted to the graduate program in architecture with special conditions for coursework as individually determined.

Significant library facilities available to students in the School: Brown Hall Library serves the School with a large specialized collection of books, periodicals, slides, and reference material supplementing the resources of the entire University Libraries.

ART

Prof. Bruce Barton, Acting Chairman, Division of Art
Prof. Manuel Barkan, Chairman, Division of Art Education; Prof. Glenn N. Patton, Chairman, Division of Art History; Prof. A. Charles Wallischlaeger, Chairman, Division of Design.

Graduate degrees offered: Master of Arts, Master of Fine Arts, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: A three-to five-hundred-word statement of purpose must be sent to the Executive Secretary, Graduate Committee, Fine Arts. A studio area candidate must present a representative portfolio of his work. Slides or photographs are acceptable, except for painting candidates who should submit ten drawings and four paintings in the original when feasible. Eighteen hours of credit in art history are required. An art history candidate must have a B.A. or B.F.A., a record of intermediate courses in art history, and a reading knowledge of one modern foreign language.

Specific fields of knowledge required in the minimal master's program: Students wishing the master's degree in art education, history of art, or one of the studio disciplines must have 60 hours, at least 45 of which should be taken in coursework. Those seeking a Master of Arts degree in design must have 90 hours assigned by area. Art education offers the Plan B thesis option to be declared no later than the point at which 45 credit hours have been earned.

The M.F.A. degree is offered in the studio fields of ceramics, painting-graphics, and sculpture. The 90-credit-hour requirement beyond the B.A. or B.F.A. degree includes 50 hours in the major studio field, 10-15 hours in one of the remaining studio fields, and 20-25 hours in non-studio courses.

Specific fields of knowledge for which all doctoral students are held responsible: The Ph.D. degree, in the major fields where it is currently offered (history of art, and art education), requires 90 hours of credit beyond the M.A. or M.F.A. degree including credit hours for work on the dissertation. The program of study includes a
concentration of work in the field of specialization and substantial study in at least one and no more than three related fields. A thorough reading knowledge of one or dictionary reading knowledge of two modern foreign languages is required in the history of art program. There is no language requirement in art education.

Principal fields for specialization and research: Students are offered the following areas: art education (M.A., Ph.D.), ceramics (M.A., M.F.A.), environmental design; product design and visual communications (M.A.), history of art (M.A., Ph.D.), painting-graphics (M.A., M.F.A.), and sculpture (M.A., M.F.A.).

Significant library or research facilities available to students. The art library houses over 40,000 volumes, and the slide and reproduction rooms hold over 50,000 slides. The College of The Arts owns an impressive collection for the benefit of the University and the community. Individual studio areas are provided for majors in the fields of painting-graphics, sculpture, ceramics, and design.

ASTRONOMY

Prof. Arne Slettebak, Chairman, Physics and Astronomy Building, 174 West 18th Avenue


Graduate degrees offered: Master of Science, Doctor of Philosophy

Principal fields for specialization and research: (1) stellar spectroscopy and photometry, for which telescopes and auxiliary measuring equipment exist in Flagstaff, Arizona and Delaware, Ohio; (2) theoretical studies of stellar atmospheres, gaseous nebulae, and atomic physics; (3) laboratory astrophysics, with shock tube and related equipment on the Ohio State University campus; (4) radio astronomy, with radio telescopes and auxiliary equipment in Delaware, Ohio; (5) solar spectroscopy and solar physics; (6) galactic structure.

Specific fields of knowledge required in the minimal master's program: The student must complete at least 45 quarter hours of advanced astronomy, physics, and mathematics courses, of which no fewer than 30 quarter hours must be in the area of astronomy. The latter would normally include the course sequences in stellar atmospheres, stellar interiors, and dynamical astronomy.

Specific fields of knowledge for which all doctoral students are held responsible: The student must complete at least 70 quarter hours of advanced astronomy, physics, and mathematics courses, of which no fewer than 40 quarter hours must be in the area of astronomy. A detailed statement of Departmental requirements may be obtained on request from the Department of Astronomy.

Specific foreign languages accepted or required: Reading ability must be demonstrated in two (for the Ph.D.) or one (for the M.S.) of the following languages: German, Russian, a Romance language (French, Spanish, or Italian).

Significant library or research facilities available to students in this department: The Perkins Observatory in Delaware, Ohio, operated jointly by The Ohio State University and Ohio Wesleyan University, houses a 32-inch reflecting telescope, with photometers and a spectrograph; a 16-24 inch f/2.7 Schmidt camera with an objective prism; microphotometer, wave-length measuring engines, astrophotometer, and a 7,000-volume astronomy library. A shock tube laboratory for the experimental determination of atomic parameters of astrophysical interest plus auxiliary measuring equipment of various kinds is located on the Ohio State University campus. A 260-foot radio telescope is available for advanced student research in collaboration with the Department of Electrical Engineering. At Flagstaff, Arizona, the Department operates a 72-inch reflecting telescope (equipped with spectrographs and photometers) in collaboration with Ohio Wesleyan University and the Lowell Observatory.

ATMOSPHERIC SCIENCES

See page 99.
BIOCHEMISTRY
Prof. George S. Serif, 101 Vivian Hall, 2121 Fyffe Road

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: Since biochemistry is the meeting ground of the chemical, physical, and biological sciences, students taking up graduate study in biochemistry must have completed a bachelor's degree in one of these areas, with secondary emphasis in the other areas. All applicants are encouraged to take the Graduate Record Examination, which is required for each applicant whose average is below 2.7.

Requirements for the master's degree: All candidates for the master's degree must have training equivalent to an undergraduate major curriculum in chemistry. Coursework must include Biochemistry 705 through 710. Knowledge of chemistry is expected at the level of Chemistry 841, 842, and of some biology at an advanced level. A dictionary reading knowledge of an approved foreign language is required.

Requirements for the degree Doctor of Philosophy: All of the above requirements for the master's degree must be fulfilled. In addition, the program requires knowledge of several areas of biochemistry at the 800 level and other areas of biology, chemistry, or physics as may be necessary to support independent investigation in the area of biochemistry selected by the candidate in consultation with his adviser. A dictionary knowledge of one foreign language is required, and this should be ordinarily chosen from German, Russian, or French.

All students are expected to assist in the teaching program as a part of their graduate training.

Principal fields for specialization and research: Biochemical control mechanisms including hormone-enzyme interactions, feedback controls, cellular differentiation and isozymes; biosynthesis and intermediary metabolism of carbohydrates, nucleic acids, lipids, and proteins in higher animals, plants and microorganisms; biosynthesis of complex plant products, enzyme mechanisms, modes of action of antibiotics and chemotherapeutic agents, nucleic acid chemistry, foods and nutrition.

Significant library or research facilities available to students: Excellent library and research facilities which make possible the study of almost any biochemical problem are available.

BIOLOGY

111 Edith Cockins Hall, 1958 Neil Avenue

The College of Biological Sciences provides opportunities and financial support for graduate study and research in biology and comprises seven academic faculties, which are responsible for instruction and research in specific areas representing common interests.

The Academic Faculties are those of (1) Biochemistry and Molecular Biology, concerned with the chemical phenomena characterizing living systems; (2) Biophysics, concerned with the physical basis of biology and biological systems analysis; (3) Entomology, concerned with study and service involving insects and related invertebrates; (4) Genetics, concerned with genetic biology from the molecular to the population level and with biometrics; (5) Microbial and Cellular Biology, concerned with biological phenomena at the cellular level, cytology, and microbiology; (6) Organismic and Developmental Biology, concerned with the major groups of organisms, their growth, development, form and function, and systematics; and (7) Population and Environmental Biology, concerned with ecology and biological phenomena at the population level, ethnology, parasitology, wildlife and fishery biology, and systematics.

Five Graduate-Degree Programs leading to the master's degree and the Ph.D. degree presently are offered; namely, Biochemistry, Biophysics, Botany, Microbiology, and Zoology and Entomology. The applicant, before completing the application for admission, should examine each of the programs, the principal fields for specialization and research under each in order to determine which program best meets his needs and interest, and the re-
requirements for admission and for the graduate degrees.

Financial support for graduate students is provided in the College of Biological Sciences chiefly through Graduate Assistantships in the Graduate Degree Programs. For a three-quarter appointment, the stipend ranges from $2,250 to $3,375 for half-time employment. A limited number of four-quarter appointments are available, with the fourth quarter at the same quarterly rate of pay. A student awarded a fellowship which provides either a 9-month or 12-month tenure option, and who elects the 9-month option, is offered a summer appointment as either a Teaching Assistant or Research Assistant in the College of Biological Sciences at a stipend of $975. A Biology Fund has been established to help support graduate student attendance at national scientific meetings. Additional information may be obtained from the Chairman of the Graduate Committees of the respective Graduate Degree Programs and from the College Office.

BIOMEDICAL ENGINEERING

See page 99.

BIOPHYSICS

Prof. Leo E. Lipetz, Chairman, 200 Lord Hall, 124 West 17th Avenue


Graduate degrees offered: Master of Science, Doctor of Philosophy

Biophysics is the application of the physical approach (ways of thinking) to the understanding of living systems. The living system may be considered at any of the following levels of structural organization: molecular, subcellular, cellular, tissue, organ system, and organism. The concepts and relations common to the understanding of all these levels are the field of theoretical biophysics.

Admission requirements not stated in the general Graduate School section: The applicant must present evidence of ability to do work of high quality in the biological and physical sciences and in mathematics.

Specific fields of knowledge required in the minimal master's program: The student will be examined on his knowledge of four of the nine fields offered for specialization and research. (See below.) In addition he must exhibit familiarity with the following cognate areas: biological science, physics and/or electrical engineering, chemistry and/or biochemistry, and mathematics.

Specific fields of knowledge for which all doctoral students are held responsible: The student must exhibit a thorough understanding of four of the nine fields offered for specialization and research. (See below.) In addition he must exhibit competence in the following cognate areas: biological science, physics and/or electrical engineering, chemistry and/or biochemistry, and mathematics.

Language requirement for the Ph.D. program: To be recommended by each student's advisory committee and approved by the Graduate Committee. The alternatives are as follows: (a) To pass a comprehensive examination in one language; (b) To complete with high grades one year's courses in (I) logic, or (II) computer programming, or (III) information measure and handling; (c) or other approved alternative.

Principal fields for specialization and research: molecular biophysics, cellular biophysics, biomechanics, bioelectricity, photosynthesis, bioenergetics, biocybernetics, psychophysics, and theoretical biophysics.

All graduate students are required to participate in the teaching program.

A reading collection in biophysics is maintained in a library for use of students and staff. The research facilities of the Institute for Research in Vision and of the individual faculty members are available to qualified students.

BIOSTATISTICS

Prof. J. S. Rustagi, Chairman, Committee on Biostatistics, 118 Mathematics Bldg., 231 W. 18th Ave.

Professors W. Harvey, D. R. Whitney, M. D. Keller; Assistant Professors R. C. Srivastava, Francis Allaire.

Graduate Degree Offered: Doctor of Philosophy

Admission requirements not stated in the general Graduate School Section: The ap-
applicant must give evidence of ability to do work of high quality in mathematics, statistics, and biological sciences.

Specific fields of knowledge for which all doctoral students are held responsible: All students must go through the core curriculum of the biostatistics program, which includes training in stochastic processes, experimental designs, survey sampling, and a selected area of biology and biostatistics. The training in biological areas will be accomplished by making use of courses that are presently available in physiology, biochemistry, pharmacology, and genetics.

Principal fields for specialization and research: Participants in the biostatistics program include faculty from areas of mathematics, preventive medicine, dairy science, and zoology and entomology. Present interest in research includes applied statistics, stochastic models in medicine, mathematical epidemiology, population genetics, and environmental health statistics.

Significant library or research facilities available to students: The use of the Statistical Laboratory is available to students for gaining experience in statistical consultations. In addition to statistical journals and books in the Mathematics Library, the library of the Statistical Laboratory contains significant statistical books, journals, and reprints.

BOTANY

Prof. J. A. Schmitt, Graduate Committee Chairman, 1735 Neil Avenue


Graduate degrees offered: Master of Science, Doctor of Philosophy

Specific fields of knowledge required in the minimal master's program: In addition to the requirements of the Graduate School, candidates for the M.S. degree shall have had, prior to taking the master's examination, courses acceptable to the Graduate Committee in (1) organic or biological chemistry, (2) mathematics, (3) general zoology, and (4) any four of the following seven areas (or extradepartmental courses acceptable to the Graduate Committee): pathology, anatomy-morphology, physiology, ecology, phycology-lichenology, genetics, and taxonomy. The above requirements may be met at either the graduate or undergraduate level, except that a minimum of 20 quarter hours of graduate-credit courses must be taken while the student is in the Graduate School. A thesis is required of all master's candidates.

Specific fields of knowledge for which all doctoral students are held responsible: The candidate for the Ph.D. degree, in addition to fulfilling the Graduate School requirements and the master's degree requirements listed above, shall have had at the time of taking the comprehensive examination courses in at least five of the areas listed above, as well as in statistics and physics. He must also have taken a minimum of 35 quarter hours of graduate credit courses within the botany program while resident in the Graduate School, inclusive of those courses taken for the master's degree. He must also satisfy the requirement of one foreign language. (Consult the Chairman, Graduate Committee, for details of this requirement.)

Principal fields for specialization and research: The program offers the following major areas: anatomy, cytology, ecology, genetics, lichenology, morphology, mycology, phycology, physiology, and taxonomy.

All students as a part of their graduate training must participate in the teaching program.

Significant library or research facilities available to students: Library collections in the biological sciences include 50,000 catalogued volumes and a large reprint collection of over 40,000 articles which are available to the researcher. In addition to standard laboratory equipment, special research facilities include a field ecological station, herbarium, electron microscope facilities, controlled environmental rooms, and the Stone Laboratory for lake research at Put-in-Bay, Ohio. Additional research facilities are also available at the Ohio Agricultural Research and Development Center, Wooster, Ohio.
BUSINESS ADMINISTRATION

Prof. W. Arthur Cullman, Director, Graduate Business Programs, 356 Hagerty Hall, 1775 S. College Rd.
Prof. Robert B. Miner, Chairman, Graduate Committee, 450 Hagerty Hall, 1775 S. College Road

Graduate degrees offered: Master of Arts, Master of Business Administration, Doctor of Philosophy

Everett D. Reese Professor of Economics and Banking

Specific fields of knowledge required in the minimal master's program: Subjects required of all Master of Business Administration degree students include manpower management, quantitative methods in administration, formal organization theory, economic macro theory, economic micro theory, business controls, advanced finance, advanced marketing, advanced production, and business policy. Students have the option of writing a thesis (Plan A) or choosing among several non-thesis options (Plan B). (See page 27.)

CERAMIC ENGINEERING

Prof. John O. Everhart, Chairman, 177 Watts Hall, 2041 North College Road
Prof. Ralston Russell, Jr., Graduate Committee Chairman
Professors John O. Everhart, Arthur J. Metzger, Ralston Russell, Jr.; Associate Professor William B. Shook; Assistant Professors William B. Campbell; Burnham W. King, Jr.; Adjunct Professors Charles J. Koenig, John F. J. Hicks; Adjunct Assistant Professor Carl A. Alexander.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Graduate programs in ceramic engineering include advanced experience in ceramic science and engineering, broadening through related disciplines such as mineralogy, metallurgy, engineering mechanics, mathematics, chemistry, and physics, and a significant independent research or engineering effort. The basic objectives are the development of graduates having special aptitudes and motivations for the solution of ceramics and materials problems, and the advancement of ceramic science. The graduate programs are designed to encourage self-reliance and individual development, although a faculty adviser provides counsel in the pursuit of both academic and research programs.

Programs may be oriented toward fundamental science, applied science, or engineering analysis, with thesis or dissertation problems involving ceramic or composite materials, reactions, behaviors, mechanisms, processes, systems, or products. Master's programs tend to emphasize engineering and engineering development, while doctoral programs are commonly more science-oriented, particularly with respect to the dissertation effort. However, either type of program may emphasize engineering or science.

Graduate enrollment in ceramic engineering includes baccalaureate graduates from various schools having ceramic or ceramic engineering curricula, and students from other basic engineering disciplines are encouraged in view of the broad scope of ceramics.

Most graduate students are supported financially through fellowship or other
appointments, which allow in most cases a full-time graduate effort.

Admission requirements not stated in the general Graduate School section: Approval of the Graduate Committee of the Department of Ceramic Engineering is required for admission to a graduate program in ceramic engineering.

Specific subjects or fields of knowledge required in the minimal master's and doctoral programs: Candidates for all graduate degrees in ceramic engineering are required to present or obtain adequate credits in mathematics through calculus, college physics, general and physical chemistry, crystallography, and engineering mechanics. Such degree candidates must also satisfy in a manner approved by the Departmental graduate committee the requirements of basic courses in ceramic engineering as needed. In addition, each degree candidate will complete a program of advanced study in ceramic engineering, including research approved for the thesis or dissertation.

Foreign language in doctoral programs: While foreign language proficiency is both desirable and is encouraged, no prior or current foreign language experience is normally required for the completion of either the master's or doctoral program in ceramic engineering.

In a specific case where the library use of foreign language is essential to successful pursuit of a doctoral dissertation subject or to a special course of study, the student will be counseled by the faculty adviser to demonstrate in a manner acceptable to the adviser a proficiency in one or two foreign languages covering the most pertinent literature.

Significant library or research facilities available to students in this department: An interdepartmental library with a comprehensive collection of books, reports, and periodicals covering worldwide literature of interest to students of ceramics, metallurgy, and mineralogy is available. Graduate students are assigned special office and laboratory space but have access to all Departmental facilities for ceramic and high temperature research.

**CHEMICAL ENGINEERING**

Prof. Aldrich Syverson, 121 Chemical Engineering Building, 140 West 19th Avenue


Graduate degrees offered: Master of Science, Doctor of Philosophy

Specific subjects or fields of knowledge required in the minimal master's program: The program must include a series of advanced courses in the basic fields of thermodynamics, kinetics, and transport phenomena, and at least one advanced course in mathematics. Additional courses in chemical engineering as well as courses in related fields outside the Department, such as chemistry, physics, and mathematics, are selected with the guidance and approval of an adviser. A thesis is required with a minimum of 9 credit hours in research.

Specific fields of knowledge for which all doctoral students are held responsible: The student must be proficient in undergraduate chemistry, including organic and physical. He must have at least 12 credit hours of advanced mathematics beyond differential equations and all advanced courses in the basic chemical engineering areas (kinetics; thermodynamics; heat, mass, and momentum transfer; unit operations; advanced design). In consultation with the adviser, the program is arranged to suit the individual needs. Emphasis is placed upon taking as much related work outside the department as possible.

Foreign language requirement: For the Ph.D. program, the language requirement is 8 credit hours of college-level courses in a foreign language, or the equivalent as judged by proficiency examinations, except for foreign students who must be proficient in English.

Principal fields for specialization and research: Fields of specialization include thermodynamics, kinetics, heat, mass and momentum transfer, unit operations, absorption, high polymers, rheology, air pollution control, waste treatment, petroleum, reservoir engineering, solid and liquid fuels, chemical process research, nuclear chemical engineering, electro-chemical en-
ENGINEERING, PLASMA ENGINEERING, PROCESS
OPTIMIZATION, AND MATHEMATICAL MODELING
AND SIMULATION.
SIGNIFICANT LIBRARY OR RESEARCH FACILITIES
AVAILABLE TO STUDENTS IN THIS DEPARTMENT:
EXCELLENT LIBRARY FACILITIES IN CHEMISTRY,
PHYSICS, AND ALL BRANCHES OF ENGINEERING
ARE AVAILABLE. RESEARCH LABORATORIES AND
EQUIPMENT OF THE MOST MODERN TYPES ARE
AVAILABLE FOR THE STUDENTS' USE. EXCELLENT
ANALOG AND DIGITAL COMPUTER FACILITIES AND
SERVICES ARE PROVIDED FOR GRADUATE RESEARCH
AND INSTRUCTION.

CHEMISTRY

Prof. Leon M. Dorfman, Chairman, McPherson Chemical Laboratory, 140 West 18th Avenue
Prof. Ernest W. Bowerman, Administrative Vice Chairman
Asst. Prof. Larry B. Anderson, Academic Vice Chairman

GRADUATE DEGREES OFFERED: MASTER OF SCIENCE, DOCTOR OF PHILOSOPHY

ADMISSION REQUIREMENTS NOT STATED IN THE GENERAL GRADUATE SCHOOL SECTION: ADMISSION IN GOOD STANDING TO GRADUATE DEGREE PROGRAMS IN CHEMISTRY REQUIRES DEMONSTRATION OF AN ACCEPTABLE B.S. OR B.A. DEGREE AND A MINIMUM OVERALL UNDERGRADUATE POINT-HOUR RATIO OF AT LEAST 2.9 (4.0 BASIS) OR THE SATISFACTION OF SUCH SPECIFIC ADDITIONAL REQUIREMENTS AS MIGHT BE STIPULATED IN SPECIAL CASES. APPLICANTS WHOSE UNDERGRADUATE RECORDS ARE BELOW 2.5 MAY BE ADMITTED ON THE BASIS OF SATISFACTORY PERFORMANCE ON THE GRADUATE RECORD EXAMINATION AND SUITABLE RECOMMENDATIONS FROM PREVIOUS ACADEMIC ASSOCIATES.

SPECIFIC FIELDS OF KNOWLEDGE REQUIRED IN THE MINIMAL MASTER'S PROGRAM WITH THESIS: THE CANDIDATE MUST CONDUCT INDEPENDENT RESEARCH UNDER THE GUIDANCE OF AN APPROVED PRECEPTOR, PREPARE AND PRESENT A THESIS ON THE WORK, AND DEMONSTRATE THAT IT ADDS SIGNIFICANT NEW KNOWLEDGE TO SOME AREA OF CHEMISTRY. THE CANDIDATE WOULD NORMALLY SELECT APPROXIMATELY 27 HOURS OF COURSES IN CHEMISTRY AND RELATED FIELDS. THE CHEMISTRY COURSES MUST BE UPPER LEVEL; THE RELATED COURSES MUST BE ACCEPTABLE TO THE DEPARTMENT OF CHEMISTRY. THESIS WORK WILL REQUIRE AT LEAST 15 ADDITIONAL CREDIT HOURS. THE TOTAL COURSEWORK MUST BE A MINIMUM OF 45 HOURS. THE CANDIDATE MUST DEMONSTRATE BY EXAMINATION HIS ABILITY TO READ CHEMICAL PAPERS IN ONE FOREIGN LANGUAGE, PREFERABLY GERMAN. ABOUT TWO WEEKS PRIOR TO THE DATE PROPOSED FOR CONFERRING THE DEGREE, THE CANDIDATE MUST PASS A WRITTEN OR ORAL EXAMINATION. SHOULD THE GRADUATE RECORD BE WHOLLY SATISFACTORY, THE SCOPE OF THE EXAMINATION WOULD BE CONFINED TO THE CANDIDATE'S FIELD OF SPECIALIZATION.

SPECIFIC FIELDS OF KNOWLEDGE REQUIRED IN THE MINIMAL NON-THESIS MASTER'S PROGRAM: THE CANDIDATE MUST HAVE A MINIMUM OF 50 HOURS OF COURSEWORK IN CHEMISTRY OR RELATED FIELDS ACCEPTABLE TO THE DEPARTMENT OF CHEMISTRY. AT LEAST 15 AND NOT OVER 23 OF THESE HOURS MUST BE IN MINOR RESEARCH PROBLEMS. A FOUR-HOUR EXAMINATION COVERING THE WORK LEADING TO THE M.S. DEGREE MUST BE PASSED. THE LANGUAGE REQUIREMENT IS THE SAME AS THAT DESCRIBED ABOVE.

SPECIFIC FIELDS OF KNOWLEDGE FOR WHICH ALL DOCTORAL STUDENTS ARE HELD RESPONSIBLE: ALL GRADUATE STUDENTS ARE TESTED FOR PROFICIENCY AT A HIGH-QUALITY UNDERGRADUATE LEVEL IN THE AREAS OF ANALYTICAL, INORGANIC, ORGANIC, AND PHYSICAL CHEMISTRY. DEFICIENCIES ARE REMOVED AS SOON AS POSSIBLE BY ENROLLMENT IN APPROPRIATE COURSES OR BY INDEPENDENT STUDY. THROUGH COURSEWORK AND INDEPENDENT STUDY, THE CANDIDATE MUST DEVELOP A MASTERY OF HIS MAJOR AREA AT AN ADVANCED LEVEL. HIS MASTERY OF THE FIELD MUST BE DEMONSTRATED THROUGH THE WRITTEN AND ORAL EXAMINATIONS FOR ADMISSION TO CANDIDACY GIVEN IN HIS SPECIAL AREA OF RESEARCH. SATISFACTORY PERFORMANCE IN GRADUATE-LEVEL COURSES IN AREAS OTHER THAN THOSE OF HIS MAJOR SUBJECTS IS ALSO REQUIRED. ONLY GERMAN, RUSSIAN, AND FRENCH ARE JUDGED TO BE ACCEPTABLE TO FULFILL THE LANGUAGE REQUIREMENTS FOR THE PH.D. THIS REQUIREMENT IS USUALLY SATISFIED BY DEMONSTRATION OF A READING KNOWLEDGE OF TWO OF THESE THREE LANGUAGES. IT IS THE INTENT OF THE PH.D. PROGRAM IN CHEMISTRY THAT THE STUDENT EXPEND HIS MAJOR EFFORT ON THE RESEARCH WHICH CULMINATES IN HIS PH.D. DISSERTATION.
Principal fields for specialization and research: The Department offers the following major areas: analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, physical chemistry, and theoretical chemistry.

Significant library or research facilities available to students in this department: The Department has one of the most extensive chemical libraries in the United States and ready access to the libraries of the Battelle Memorial Institute and the Chemical Abstracts Service. The laboratories contain nearly all the special instruments necessary for modern chemical research.

CITY AND REGIONAL PLANNING

Prof. Laurence Gerckens, Chairman, 107 Brown Hall, 190 West 17th Avenue
Professor Laurence Gerckens; Associate Professor W. R. Mills.

See page 29 for admission requirements and description of the curriculum for the degree Master of City Planning.

CIVIL ENGINEERING

Prof. Hamilton Gray, Chairman, 228 Civil and Aeronautical Engineering Building, 2036 Neil Avenue
Prof. Kenneth W. Cosens, Graduate Committee Chairman

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: The Department requires a bachelor's degree in civil engineering from an accredited institution, or a bachelor's degree in engineering science and permission of the Graduate Committee, or completion of the fourth year of The Ohio State University combined engineering program.

Specific fields of knowledge in the minimal master's program: In addition to the general requirements for the Master of Science degree, students should expect to fulfill the specific requirements listed below under either Option A or B. Option A provides an exposure to research activity through the thesis requirement, and students planning to continue for the Ph.D. are normally expected to satisfy the requirements of Option A.

Option A—A minimum of 45 credit hours required
(a) A minimum of 15 credit hours of 800-level coursework within the Department of Civil Engineering in one of its fields of specialization.
(b) A minimum of 5 credit hours of 800-level coursework in an area related to the student's field of specialization.
(c) A minimum of 5 credit hours of mathematics taken from a current list approved by the Department faculty.
(d) Nine credit hours of thesis, CE 999.

Option B—A minimum of 54 credit hours required
(a) A minimum of 30 credit hours of 800-level coursework of which at least fifteen shall be in the Department of Civil Engineering in one of its fields of specialization.
(b) A minimum of 8 credit hours of mathematics taken from a current list approved by the Department faculty.
(c) Satisfactory performance in a comprehensive written examination taken at or near the conclusion of the program.

Specific fields of knowledge for which all doctoral students are held responsible: A student must offer two minor fields of study, one of which must be outside the Department. Normally he is expected to offer mathematics as one of his minor fields.

Foreign languages: There is no general requirement for foreign language proficiency in the Department of Civil Engineering.

Principal fields for specialization and research: The Department offers courses in the following major areas: structural engineering, water resources engineering, transportation and traffic engineering, soil mechanics and foundation engineering, surveying and mapping, and materials engineering.

Significant library and research facilities available to students in this department: Among available laboratories are the following: Building Research Laboratory, Water Resources Center, Transportation
Research Center, Materials Laboratory, Soil Mechanics Laboratory, and Photogrammetry Laboratory. There is also a Civil-Aeronautical Engineering Library with a floor area of 2,440 square feet, housing in excess of 15,000 volumes and bound periodicals.

CLASSICS

Prof. Mark Morford, Acting Chairman, 217 Derby Hall, 154 North Oval Drive

Prof. Kenneth M. Abbott, Graduate Committee Chairman

Professors Kenneth M. Abbott, Charles L. Babcock, Clarence A. Forbes; Visiting Professor Kenneth Quinn; Associate Professors Robert J. Lenardon, Mark Morford; Assistant Professors Bernard C. Barmann, Vincent J. Cleary, John T. Davis, Carl C. Schlam.

Graduate degrees offered: Master of Arts (Greek, Latin, and Classics), Doctor of Philosophy (Classics)

Admission requirements not stated in the general Graduate School section: The Department requires an undergraduate major in Latin or Greek or its equivalent. This requirement may be modified at the discretion of the Departmental Graduate Committee. Training in French or German or both is desirable: undergraduate work in ancient history, philosophy, linguistics or archaeology will be useful.

Specific fields of knowledge required in the minimal master's program: Emphasis is placed on the history and criticism of Greek or Latin literature, or of both for the degree in classics. The student concentrating on Greek or Latin will be strongly advised but not required to take work in the other language. Courses in ancient history, archaeology, linguistics or philosophy may be selected as part of the program. If only one language is undertaken, one or more of these fields may be included. A reading list of selected works in the principal language (or in both for the degree in classics) and a list of appropriate secondary material form the basis, in conjunction with the student's coursework, for a written examination after admission to candidacy in the final quarter of the program. A thesis must also be submitted demonstrating competence in methods of research and in making critical judgments.

Specific fields of knowledge for which all doctoral students are held responsible: Students may elect to proceed directly to the Ph.D. degree without undertaking the M.A. examinations or writing the M.A. thesis. Students preparing for the degree must have a thorough reading knowledge of both Greek and Latin, a mastery of history and criticism of both Latin and Greek literature, ability to write acceptable Greek and Latin prose, and a supplementary knowledge of linguistics, archaeology, bibliography and ancient history. The sequence of courses in palaeography and textual criticism, or its close equivalent, will be required.

Reading lists in Latin and Greek authors form the basis for translation examinations in both languages. The requirement in prose composition may be satisfied by successful completion of the advanced prose composition course in each language or by a demonstration of proficiency in composition in both languages. The translation and composition requirements precede the General Examinations.

The General Examinations are in two parts, written and oral. The written examinations consist of four parts: (1) Greek literature; (2) Latin literature; (3) Greek or Roman History; (4) an optional subject to be chosen from linguistics, ancient philosophy, archaeology, epigraphy, palaeography, topography, a special author. The oral examination will follow the written examinations and may deal with subjects discussed in the written examinations or others in the general field of the classics.

A dissertation is required, followed by an oral defense.

Specific foreign languages accepted or required: Examinations for reading ability in French and German are required of Ph.D. students as early as possible in the program and must be completed successfully before admission to candidacy. Proficiency in Italian is desirable but not required.

Principal fields of specialization and research: The Department offers textual criticism, literary history, literary criticism, linguistic and grammatical studies, and historical and topographical studies of ancient civilization. The Department cooperates with the Department of History in the field of classical archaeology; and with the Center for Medieval and Renaissance studies.
Significant library or research facilities available to students: The library has extensive collections in the areas of Homeric studies, Roman comedy, and Medieval and Renaissance Studies. The Department possesses microfilms of a substantial number of manuscripts of Lucan.

**COMPUTER AND INFORMATION SCIENCE**

Prof. Marshall C. Yovits, Chairman, 400 Caldwell Laboratory, 2024 Neil Avenue

Professors Harold B. Pepinsky, Roy F. Reeves, Charles Saltzer, Marshall C. Yovits; Visiting Professor Harry H. Josselson; Associate Professors Ronald L. Ernst, Clinton R. Foulk, Jerome Rotstein; Assistant Professors Marion R. Finley, Jr., Douglas S. Kerr, Anthony E. Petrarca, James B. Randels, James E. Rush, Lee J. White.

Graduate degrees offered: Master of Science, Doctor of Philosophy

The Department of Computer and Information Science is an academic unit in the College of Engineering, operating in part as an interdisciplinary program with the cooperation of many other departments and colleges throughout the University. The program emphasizes education, research, and the professional practice and application of computer and information science. Both undergraduate and graduate degree programs are offered.

Admission requirements not stated in the general Graduate School section: The Department requires that each student present evidence of credit for Computer and Information Science 241 and 543, mathematics through the calculus (Mathematics 254), and 10 additional quarter hours of mathematics or computer and information science. Option III students should also have credit for Computer and Information Science 640 or equivalent. These requirements may be relaxed by the Graduate Committee for otherwise exceptionally qualified students.

Specific fields of knowledge required in the minimal master's program: All students are required to take a common core program consisting of courses in engineering psychology, information theory, linguistics, and computer organization, and to take selected additional courses in computer and information science and mathematics appropriate to the students' interests and objectives. Three options are available.

Option I is designed for the student desiring a theoretical foundation in computer and information science. Option II is designed for the student specializing in information systems. Option III is designed for the student specializing in computer systems. Each of these options provides a background in several aspects of computer and information science; each may be taken under Plan A (with thesis) or Plan B (without thesis); and each of the options leads to the doctoral program in computer and information science.

Specific fields of knowledge for which all doctoral students are held responsible: All students studying for the doctoral degree are responsible for the content of the courses in the core program; in addition, students other than those specializing in numerical analysis are expected to take Computer and Information Science 760 and 761 (Mathematics of Information Handling). The doctoral course requirements are otherwise quite flexible and will be tailored to the particular background and interests of the individual student.

Specific foreign languages accepted or required: The Departmental foreign language requirement for the doctoral degree is a dictionary reading knowledge of two modern languages or a thorough reading knowledge of one modern language. The modern language or languages chosen must be French, German, or Russian. The requirement may be fulfilled by passing the appropriate Educational Testing Service language examination administered by the University Orientation and Testing Center; by passing an examination administered by the appropriate language department; or by satisfactorily completing specified courses in the language chosen. Credit for language examinations passed in other institutions may be transferred at the discretion of the Department.

Principal fields for specialization and research: Computer and information science deals with the body of knowledge concerned with the quantitative relationships, concepts, theory, and methods common to the processing and utilization of information in different fields, and with the theory and operation of the automatic equipment and systems used to process information. The instructional areas emphasized are as follows: (1) general theory of information; (2) information storage and retrieval; (3)
theory of automata, finite state machines, and computability; (4) artificial intelligence, self-organizing and adaptive systems; (5) pattern recognition; (6) computer programming, including systems programming; (7) theory, design, and application of artificial programming languages and translators; (8) digital computer organization and functional design; (9) numerical analysis and mathematical programming; (10) man-machine interaction and systems, particularly in a conceptual sense; (11) computational and mechanical linguistics, semantic analysis, machine translation of natural languages; (12) management information, including logistics information systems, theory of organization, information as a resource; (13) information processing, transmission, and communication in biological systems; (14) social, economic, and psychological aspects of information production and processing. The programs are developed with the close cooperation and assistance of other departments concerned with aspects of this field.

Significant library or research facilities available to students in this department: The Department of Computer and Information Science, jointly with the Computer Center, will install in mid-1969 a moderate size flexible time-sharing computer to be dedicated to research and education in the field of computer and information science. The computer, the PDP-10, manufactured by the Digital Equipment Corporation of Maynard, Massachusetts, will have a number of remote on-line terminals as well as sophisticated input/output equipment. It will be available to the staff and graduate students of the Department for research studies involving nonstandard and innovative applications of computers. In addition, the Department has access to the facilities of the University Computer Center. (See page 14.) The research activities of the Department are integrated with the academic program and supported in large part by the National Science Foundation through the Computer and Information Science Research Center. The Department also interacts closely with both the Battelle Memorial Institute and the Chemical Abstracts Service, which are adjacent to the Ohio State campus. These organizations as well as others in the Columbus area are assisting in the development of the academic and research programs of the Department.

CONSERVATION

See page 99.

DAIRY SCIENCE

Prof. N. L. VanDemark, Chairman, 120 Plumb Hall, 735 Stadium Drive


Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: Students contemplating enrollment for an advanced degree should initiate correspondence with the chairman.

Specific fields of knowledge required in the minimal master's program: Candidates for the Master of Science degree are expected to attain competence in one or more areas of basic sciences selected from the fields of anatomy, biochemistry, genetics, mathematics, microbiology, nutrition, physiology, statistics, or zoology, as well as dairy science. Knowledge acquired in these fields will be helpful in the instructional activities required of all candidates. A thesis is required, and a reading knowledge of one foreign language is recommended.

Specific fields of knowledge for which all doctoral students are held responsible: All candidates for the Doctor of Philosophy degree are expected to be knowledgeable in the broad areas of biology and to develop competence in depth in one or more of the following fields: biochemistry, genetics, nutrition, physiology, statistics, or another field agreed upon by the persons concerned. In connection with the instructional activities required of all candidates, each will be held responsible for a general understanding of the dairy industry and the related basic sciences. The Department has no foreign language requirement.

Principal fields for specialization and research: Students may choose to specialize in animal nutrition, animal genetics, animal physiology, or dairy production. Special fields of interest within these broad areas may be accommodated.
Significant library or research facilities available to students in this department: Extensive animal, laboratory, library, and computer facilities under the supervision of experienced staff both at Columbus and at Wooster enable students to undertake research problems of almost any scope in a wide area of interests. Cooperative investigations with other agencies and grant-supported projects offer opportunities for research even beyond the facilities located at Columbus and Wooster.

DAIRY TECHNOLOGY

Prof. Ira A. Gould, Chairman, 122-C Vivian Hall, 2121 Fyffe Road

Professors Ira A. Gould, W. James Harper, T. Kristoffersen, Walter L. Slatter (on leave); Associate Professors P. M. T. Hansen, E. M. Mikolajcik, Demetrius G. Vakaleris; Assistant Professor John Blaisdell.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: Students entering graduate study in the Department who are from nonaccredited schools or non-dairy departments may be expected to complete satisfactorily not fewer than 20 hours of courses in dairy technology.

Specific fields of knowledge required in the minimal master’s program: The Master of Science degree program provides options in manufacturing, business, science, and engineering. At least two-thirds of the credit hours for the degree must be for non-thesis graduate courses. A thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: The Doctor of Philosophy degree program involves largely the physical and biological sciences or engineering. Doctoral candidates are responsible for knowledge in depth of the chemical, physical, and biological systems of milk and milk foods and, when appropriate, the engineering fundamentals applicable to such systems. At least two-thirds of the non-dissertation course credits must be taken in supporting subject-matter areas.

Foreign language requirement: None

Principal fields for specialization and research: Research specialization may be achieved in (1) dairy plant operations and management; (2) chemistry of milk, milk products, and milk components with emphasis on lipid, protein, carbohydrate, salt, and enzyme systems and their interactions; (3) dairy microbiology with attention to microbiologic mechanisms, fermentation products, and cell metabolism; or (4) food processing engineering in such areas as heat, mass, and momentum transfer; systems design; operations research; and materials science.

Significant library or research facilities available to students in this department: Special research facilities include (1) an industrial type of dairy operation with modern equipment for management and engineering studies, and (2) instrumental equipment for spectroscopy, chromatography, electrophoresis, column separation, and radioactivity.

DANCE

Prof. Helen P. Alkire, Chairman, 2043 Service Building Road

Professor Helen P. Alkire; Associate Professor Vera J. Blaine

Graduate degrees offered: Master of Arts

Admission requirements not stated in the general Graduate School section: Personal audition which may be substituted by a filmed reproduction to determine ability in major field; a portfolio of achievements (photographs, notation scores, literary works, reviews, costume or scene designs).

Specific subjects or fields of knowledge required in the minimal master’s program: A student’s program is an individualized one determined in conference with the student’s major adviser. Available areas of study include choreography, dance notation, production, performance, history, and related areas.

Plan A (with thesis) requires the completion of:

1. A minimum of 45 credit hours, 9 of which must be taken outside the field of dance and a maximum of 6 hours for preparation of the thesis;

2. A final oral and written comprehensive examination prepared and conducted by a three-member committee of which one member will represent an area other than dance.
Plan B (without thesis) requires the completion of:

1. A minimum of 50 credit hours, 9 of which must be taken outside the major field, and a maximum of 11 credit hours in choreography, production, performance, notation, or history;

2. A final examination, which may be either written or oral, or both, at the option of the examining committee which will be comprised of three members of which one member will represent an area other than dance;

3. An acceptable project in choreography, production, performance, notation, or history. These projects must be recorded on film or tape and accompanied by production notes as applicable.

Significant library, research, and performance resources available to graduate students in dance: Library holdings available include an extensive collection of original, historical, and notation source materials. Additional sources include a slide collection of over 1,000 items and film reproductions of graphic works and original literary documents in dance history.

The Dance Notation Bureau Extension, center for education and research, engages in notation research, the development of curriculum materials, the preparation of notators, and the writing and checking of dance scores. Available library resources for research include the holdings of the Dance Notation Bureau.

The University Dance Company provides an opportunity for performance and production activities with membership determined by audition. The Company concertizes locally and regionally with a standing repertory of reconstructed dance scores and commissioned works mounted by guest and faculty artists.

Additional performing opportunities are available through the College of The Arts Intermedia Workshop, a center for experimentation and study in mixed art media and technological processes.

**DENTISTRY**

Prof. William A. Bruce, Assistant Dean, 116 Dentistry Building, 305 West 12th Avenue

Regents' Professor Morgan Allison; Professors George App, Carl Boucher, William Heintz, A. C. Long, Duncan McConnell, Lyle Pettit, Benjamin Williams, John Wilson, Julian Woelfle; Associate Professors William Bruce, C. J. Cavalaris, Charles Conroy, James Marshall, Rudy Meir, Dorothy Permar, Samuel Rosen, Robert Wade; Assistant Professors George Blozis, James Rule.

Graduate degree offered: Master of Science

Programs of study leading to the Master of Science degree have been developed for dentists in specialty training programs who are planning academic careers. Fields for specialization and research include all the recognized specialties of dentistry. Depending upon one's interests and goals, programs may be developed for trainees who wish to work for the M.S. or Ph.D. degree in a basic science department.

Admission requirements not stated in the general Graduate School section: Individuals must hold the D.D.S., D.M.D., or equivalent degree and must first be accepted for specialty training by the College.

Specific fields of knowledge required in the minimal master's program: Approximately 25 hours of coursework in the related sciences of anatomy, biochemistry, microbiology, physiology, and pathology are required. Basic mastery of research design and analysis, as evidenced by a satisfactory thesis, is required. Hours devoted to clinical practice in one's specialty field do not count toward the degree.

Significant library or research facilities available to students in this college: The complete services of the Health Center Library are available. Laboratories and special clinics in the College provide ample facilities for basic and applied research.

**EAST ASIAN LANGUAGES AND LITERATURES**

Prof. Eugene Ching, Chairman, 200A University Hall, 216 North Oval Drive

Prof. David Y. Ch'en, Graduate Committee Chairman
Mershon Professor T'ien-yi Li; Professor Charles J. Fillmore; Associate Professors David Y. Ch'en, Eugene Ching, Yan-shuan Lao; Assistant Professor Hao Chang.

Graduate degree offered: Master of Arts

As a language and area studies program, the graduate program in East Asian languages and literatures aims at providing students with advanced training in language, linguistics, and literature in this geographic area. Students in related programs will benefit from language and
culture courses in this program to facilitate their research work on East Asia.

In addition to the current M.A. program in Chinese, a Ph.D. program in Chinese and an M.A. program in Japanese are being planned for the near future.

Admission requirements not stated in general Graduate School section: A candidate without an undergraduate Chinese major must have a dictionary reading knowledge of the Chinese language equivalent to three years of training in modern Chinese and one year in classical Chinese as offered in this division. He will be required to take Chinese Literature in English Translation and Elements of Chinese Culture as non-credit make-up courses.

Special fields of knowledge required in the minimal master's program: A candidate for the master's degree in Chinese is required to take four one-quarter courses in Traditional Chinese Literature and/or Modern Chinese Literature (12 credit hours); a three-quarter sequence of History of Chinese Literature (9); two courses in Chinese Linguistics (6); one Seminar (3-5); Individual Studies (2-5); and Chinese Bibliography (3).

The Division requires two year-papers (5 credit hours each) to be completed before the comprehensive examination. The year-paper project will be in coordination with a course in the candidate's major field and will be supervised by the instructor of that course and administered by the Graduate Committee of the Division.

Significant library or research facilities available to students in this division: The University Library has a select collection of Chinese and Japanese materials of approximately 36,000 volumes, including valuable serial books on Chinese humanities. The Division's participation in the CIC annual Far Eastern Languages Summer Institute provides students with special advanced courses in the East Asian field, as well as intensive language training in both Chinese and Japanese.

ECONOMICS

Prof. Jon Cunyngham, Chairman, 239 Hagerty Hall, 1775 South College Road

Prof. Belton M. Fleisher, Graduate Committee Chairman

E venor D. Reese Professor of Economics and Banking

Karl Brunner; Professors Diran Bodenhorn, Mikhail V. Condoide, Paul G. Craig, William G. DeWald, Warren Eason, David M. Harrison, Clifford L. James, Arthur D. Lynn, Jr., Glenn W. Miller, Clinton V. Oster, Herbert S. Parmes, Frances W. Quantius, Leo J. Raskind, Richard V. Sherman, Richard A. Tybout; Visiting Professors Karl Borch, Milton Kafoglis; Associate Professors Helen A. Cameron, Jon Cunyngham, Belton M. Fleisher, Samuel C. Kelley, Wilford L. L'Espere, David B. McCalmont; Visiting Associate Professor Madelyn Kafoglis; Assistant Professors Peter S. Barth, Walther P. Michael, Hayden Boyd, Kenneth M. Brown, Ronald B. Gold, John C. Weicher, Gary Walton.

Graduate degrees offered: Master of Arts, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: Graduate study in economics requires a minimum of 20 hours in economics including elementary statistics, intermediate micro theory and intermediate macro theory, and broad preparation in a number of related fields in the social sciences. Students who do not have the required background in economics may be admitted as special students to make up these deficiencies.

Specific fields of knowledge required in the minimal master's program: All students will be examined in both economic theory and statistics. The prerequisite for the statistics sequence is three quarters of elementary calculus plus a course in matrix algebra. Students who are admitted to the Graduate School without this mathematics background will required to take this mathematics in addition to their regular graduate programs. A thesis in the student's major field of interest is also a requirement.

Specific fields of knowledge for which all doctoral students are held responsible: Doctoral students are required to be competent in advanced economic theory and its history. In addition, competence in two other fields of economics and one outside field, all selected by the student and his adviser, is required. A student's competence in the four fields is tested in both written and oral examinations. Knowledge of statistics equivalent to that required in the master's program is a prerequisite for doctoral students.

Foreign languages required: There is no foreign language requirement for the M.A. or Ph.D. in economics.

Principal fields for specialization and research: The Department of Economics offers specialization in 11 areas in economics. It is possible to do research which cuts across area lines and calls for work in more than one area of economics and a
FIELDS OF STUDY AND DEGREES OFFERED

Significant library or research facilities available to students in this department: Departmental, college, and University computer installations are available for instruction and research. The Division of Research in the College of Administrative Science offers opportunities for contact with active research personnel and for assistance in doctoral research.

EDUCATION

Prof. Luvern L. Cunningham, Dean, 127 Arps Hall, 1945 North High Street

Prof. Arliss L. Roaden, Graduate Committee Chairman


Graduate degrees offered: Master of Arts, Doctor of Philosophy, Specialist in Educational Administration Certificate

Pending final approval the College of Education is organized in terms of academic faculties, which offer the following principal fields for specialization and research: adult education, audiovisual education, business education, curriculum and instruction: K-12, distributive education, educational administration, educational research, elementary education, English education, exceptional children, foreign language education, guidance, higher education, history of and comparative education, industrial arts education, mathematics education, music education, philosophy of education, radio-television education, reading education, science education, speech education, social studies education, teacher education, and vocational trade and industrial education.

Admission requirements not stated in the general Graduate School section: Special admission requirements vary according to the areas of specialization within the college. All areas of public school teaching, administration, supervision, and guidance require teaching certification. For advanced study, most areas require screening tests, interviews, and recommendations.

Specific fields of knowledge required in the minimal master's program: All master's degree programs require a core of courses in the foundations of education, and independent inquiry is a part of all programs. Plan A (thesis) programs include courses in research design and data treatment.

Specific fields of knowledge for which all doctoral students are held responsible: The student must take professional education courses in specific areas in keeping with his professional objectives and courses necessary to acquire research competence.

Specific foreign languages accepted or required: The College of Education in general does not require a foreign language for fulfilling either the M.A. or Ph.D. degree requirements, though an individual academic faculty may, in the case of the Ph.D. degree, require the student have a certain measure of competence in a foreign language.

Significant library or research facilities available to students: Special facilities are to be found in the Education Library, area libraries, Main Library, and the University Statistical Laboratories.
ELECTRICAL ENGINEERING

Prof. Marlin O. Thurston, Chairman, 205 Electronics Laboratory, 2015 Neil Avenue

Prof. F. Carlin Weimer, Graduate Committee Chairman


Graduate degrees offered: Master of Science, Doctor of Philosophy

The task of the Department of Electrical Engineering is to create and disseminate knowledge within its field of interest. The graduate curriculum is designed for an understanding of the basic physical sciences; for practice in the application of these sciences to develop resourcefulness in analyzing new technical problems; and for developing confidence in the student's ability to apply fundamental principles to the solution of new problems.

Admission requirements not stated in the general Graduate School section: Graduates of other institutions or other curricula, such as mathematics or science, may have to take additional courses which will be specified after an individual conference with a Department adviser.

Departmental requirements for the master's degree: The required 45 credit hours may not contain more than 10 hours of electrical engineering courses numbered below 800 and must contain at least 12 hours of courses numbered 800 or higher in addition to 6 to 9 hours of thesis. Students normally take 5 to 15 hours of mathematics and 5 to 15 hours of physics or other subjects related to the student's program.

Before being admitted to candidacy the student must pass a Departmental qualifying examination covering electromagnetic fields, circuits, electronics, and electromechanical systems. He must also pass an oral examination after the submission of his thesis. There is no non-thesis program.

Departmental requirements for the Ph.D. degree: Each applicant will be subject to approval by the Departmental graduate committee. Students will normally earn a master's degree first, and each applicant must make a sufficiently high score on the Departmental qualifying examination before he can be considered for acceptance into the doctoral program. Applicants who already have master's degrees must register as special students until they are accepted.

The General Examination normally includes three areas of electrical engineering in addition to mathematics and physics or other subjects related to the student's program.

Foreign language requirements for the Ph.D. degree: A comprehensive reading knowledge of one foreign language or a dictionary reading knowledge of two foreign languages will be required. French, German, and Russian are acceptable, but other languages may be approved on petition. Students from non-English-speaking countries may substitute a proficiency in English for a dictionary reading knowledge of one language.

Principal fields for specialization and research: Antennas and radiating systems, biomedical electronics, circuits and communication, coding and information processing, computers, control systems, electromagnetics, electronics, energy conversion and power, quantum electronics, radio astronomy, solid-state electron devices, and integrated circuits.

Significant library or research facilities available to students in this department: In addition to graduate study research rooms and equipment, Caldwell Laboratory contains a complete machine shop and a library devoted primarily to electrical engineering. Analog computing facilities are available in the Department, and students have access to the University's large digital computer.

Major research facilities include the Electrosience Laboratory, the Communication and Control Systems Laboratory, the Electron Materials and Devices Laboratory, and the Radio Observatory. Sponsored research projects often provide topics for theses and dissertations as well as some financial support for students.
ENGINEERING MECHANICS

Prof. Paul F. Graham, Acting Chairman, 209 Boyd Laboratory, 155 W. Woodruff Avenue

Professors Paul F. Graham, Peter E. Korda, Arthur W. Leissa, Charles T. West; Associate Professors William E. Clausen, Karl F. Graf, Karl K. Stevens, Ting-shu Wu; Assistant Professors Whai-sang Fu, Carl H. Popelar, Larry J. Segerlind, Lawrence K. Yu.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Graduate study in engineering mechanics is designed to prepare individuals for careers in teaching, research, and development. It emphasizes the analytical approach to engineering problems and the application of the principles of mechanics and applied mathematics.

Admission requirements not stated in general Graduate School section: The applicant should have shown special aptitude in the more analytical portions of his undergraduate program, such as mathematics, physics, and undergraduate mechanics.

Specific subjects or fields of knowledge required in the minimal master's program. The student will ordinarily be expected to complete 15 hours of mathematics beyond the bachelor's degree and to have at least 18 hours of work in engineering mechanics exclusive of thesis and related work in other departments. Graduate students who are planning a career in university teaching are expected to participate in the undergraduate teaching function of the Department.

Specific fields of knowledge for which all doctoral students are held responsible: In addition to the Master of Science requirements, a Doctor of Philosophy student is expected to acquire broad additional knowledge of the field of mechanics, approximately 15 hours of additional mathematics, and a knowledge in depth of a specific area of mechanics.

Foreign languages required: There is no foreign language requirement for graduate students majoring in engineering mechanics. However, Ph.D. students are encouraged to acquire a reading knowledge of one or more foreign languages as preparation for dissertation research.

Principal fields for specialization and research: The broad fields of specialization and research are dynamics, vibration, elasticity, continuum, and experimental mechanics. Each of these contains its own special topics and is, at the same time, closely related to others.

Significant library or research facilities available to students in this department: The University Library is one of the larger collections in the midwest and consists of a main library and numerous departmental branch libraries. This department's collection is housed in the nearby Davis Welding Library. The laboratory facilities are modern and are continually expanding to provide better research and instruction in traditional fields and to permit experimental work in newer areas as they develop. The photoelastic, dynamics, and vibration laboratories are particularly noteworthy.

ENTOMOLOGY

See Zoology and Entomology, page 98.

ENGLISH

Prof. Albert J. Kuhn, Chairman, 421 Denney Hall

Prof. Martin Stevens, Graduate Committee Chairman


Graduate degrees offered: Master of Arts, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: An applicant whose undergraduate average is lower than 3.0 is required to take the Graduate Record Examination. A candidate without an undergraduate English major will almost certainly be required to take more than the minimum 45 hours for a Master of Arts degree. Plan B (without thesis) is not available. (See page 101.)

Specific fields of knowledge for which all doctoral students are held responsible: Ninety quarter hours beyond the B.A.
English and American literature and language are required for admission to formal candidacy for the Ph.D. Included in this requirement are a course in bibliography and a two-quarter sequence in either linguistics or Old and Middle English.

Specific foreign languages accepted or required: The doctoral student is required to demonstrate a thorough reading knowledge in German, French, Italian, Latin, or Greek during the first year of study. Where relevant to a particular concentration, a dictionary reading knowledge of a second language may be required by the student’s adviser.

Principal fields for specialization and research. All the major fields of English and American literature and language are offered. For requirements for the Master of Arts in the Teaching of English to Speakers of Other Languages (TESOL), see page 101; requirements for the Certificate Program in TESOL are described on page 35.

Significant library or research facilities available to students in this department: Library holdings are strong in all areas of English and American literature and language, with special strength in the medieval period, textual criticism (Renaissance and modern), the 17th century and Restoration, 19th century American fiction, Hawthorne, and little magazines. The Department of English and the University operate the Center for Textual Studies, and English is one of the participating departments in the University’s Institute for Medieval and Renaissance Studies.

GEODETIC SCIENCE

Prof. Urho A. Uotila, Chairman, 237 Graduate School Building, 164 West 19th Avenue
Prof. Ivan I. Mueller, Graduate Committee Chairman
Professors Ivan I. Mueller, Urho A. Uotila; Associate Professors Sanjib K. Ghosh, Dean C. Merchant, Richard H. Rapp, Petrus Richardus; Assistant Professor Ron K. H. Adler.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Geodetic Science comprises the three related fields of geodesy, photogrammetry, and cartography. The ultimate objectives of these fields are the determination of the size and shape of the earth, the location of the physical features on the earth’s surface, and the representation of this information on maps and charts. Geodetic science is based on mathematics and physics, and to a lesser extent geography, geology, civil engineering, and astronomy. Students may specialize in geometric or gravimetric geodesy, adjustment computation, analog or analytical photogrammetry, electronic surveying, satellite geodesy, geodetic astron- omy, or map projections.

Specific fields of knowledge required in the minimal master’s program: Candidates are required to take basic courses in geodesy and photogrammetry after completing the prerequisite requirements in mathematics and physics. Specialization is possible in geodesy or in photogrammetry. A thesis is required as a part of the Master of Science program.

Specific fields of knowledge for which all doctoral students are held responsible: Twenty-five quarter hours of graduate credit in elected geodetic science courses beyond the master’s program requirements and 25 quarter hours of graduate-level mathematics beyond the baccalaureate. In addition, students must fulfill 15 quarter hours of teaching and research technique requirements before the General Examination.

Language requirement: Prior to taking the General Examination, each doctoral student must pass an examination in technical translation in a language in which there is a substantial extent of significant literature in geodetic science, such as French, German, or Russian. The student is urged to acquire proficiency in the technical translation as early in his training as possible, especially in view of the fact that much of the geodetic science literature is written in languages other than English.

Significant library or research facilities available to students in this department: The Orton Hall Library (supported by the Main Library) specializes in books and material required in geodetic science. The Department also has a worldwide gravity data collection and other geodetic and photogrammetric data which can be used in connection with thesis and dissertation work. Research facilities include modern first- and lower-order geodetic and photogrammetric equipment and digital and analog computers.
FIELDS OF STUDY AND DEGREES OFFERED

GEOPHYSICS

Prof. Richard P. Goldthwait, Chairman, 107 Mendenhall Laboratory, 125 South Oval Drive

Prof. Charles E. Corbato, Graduate Committee Chairman


Graduate degrees offered: Master of Science, Doctor of Philosophy

Instruction and research are available in the following major areas: stratigraphy-paleontology (including sedimentary petrology); stratigraphy-structural geology (including petroleum geology); geomorphology, glacial geology and Quaternary stratigraphy; petrology, geochemistry, isotope geology, and mineral deposits (including coal geology); and hydrogeology and geophysicics (including glaciology). Beginning graduate students are required to take a Qualifying Examination, the purpose of which is advisory. Results of this examination are used in planning the student's graduate program. As a part of his formal training, each graduate student is expected to have at least one quarter of teaching experience.

Admission requirements not stated in the general Graduate School section: The student must meet one of the two following sets of qualifications: (1) undergraduate geology major, including at least 30 quarter hours in geology and mineralogy and including suitable field experience; chemistry, physics, biology, and mathematics (preferably through introductory calculus); or (2) an outstanding undergraduate major in bi-
ology, chemistry, physics, mathematics, or engineering.

Specific fields of knowledge required in the minimal master's program: Requirements for the degree are 45 quarter hours of graduate coursework beyond the baccalaureate, an acceptable thesis (Plan A), and a final examination. Programs, which are determined individually by the student and a graduate adviser, may include work in mineralogy, geodetic science, chemistry, physics, mathematics, biological science, engineering, or other related fields.

Specific fields of knowledge for which all doctoral students are held responsible: Requirements for the degree are 135 quarter hours of graduate work beyond the baccalaureate, or 90 quarter hours beyond the master's degree, satisfactory completion of the departmental language requirement, a General Examination, an acceptable dissertation, and a final examination. Programs are determined individually by the student and a graduate adviser or advisory committee.

Specific foreign languages accepted or required: The Department requires a comprehensive reading competence in a single foreign language that is approved by the Departmental Graduate Committee as suitable to the student's field of interest. This competence can usually be demonstrated by a satisfactory performance on a written examination given by the appropriate language department. This requirement may be waived under special circumstances if (1) a student's native tongue is a suitable foreign language, or (2) literature in the student's field of interest is almost exclusively in English and the Graduate Committee approves a substitute program of study that is useful to the student but would not normally be undertaken. The language requirement must be satisfied before the General Examination can be attempted.

Significant library or research facilities available to students in this department: The Orton Memorial Library is an outstanding geological library. In addition, modern laboratory equipment is available for studies in micropaleontology, paleobotany, sedimentation, petrology, geochemistry, isotope geology, hydrogeology, and geophysics. Close liaison with the Departments of Mineralogy and Geodetic Science and the Institute of Polar Studies provides many opportunities for interdisciplinary studies.

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GERMAN

Regents Prof. Oskar Seidlin, Acting Chairman, 213 Derby Hall, 154 North Oval Drive
Regents Professor Oskar Seidlin; Professors Hugo Bekker, Wolfgang Fleischhauer, Charles W. Hoffmann, Wolfgang Wittkowski.

Graduate degrees offered: Master of Arts, Doctor of Philosophy

Although the programs leading to the advanced degrees in German are primarily designed to prepare the candidate for a successful teaching career on the college or university level, they aim at the larger objective of engaging the student in genuinely humanistic pursuits. The courses and seminars in literature are to enhance his critical sensibilities, whereas his work in philology and linguistics should help him to develop the rigor and self-discipline without which all scholarly endeavors become spurious.

Admission requirement not stated in the general Graduate School section: The Department requires an undergraduate major in German or its equivalent.

Specific subjects or fields of knowledge required in the minimal master's program: Students who choose Plan A must present a thesis and pass an oral examination which tests the candidate's knowledge in his field of specialization and his general familiarity with German literature. Students who choose Plan B must pass a written examination based on a Departmental reading list and prove their knowledge of the basic literary movements and figures as presented in the curriculum of courses.

Specific fields of knowledge for which all doctoral students are held responsible: No specific fields are required. Students may have a concentration either in literature, philology, or linguistics. They are supposed to be conversant with the history of German literature, with methods of its interpretation, and with the fundamental knowledge of Germanic philology and linguistics. Candidates are required to participate in at least five seminars in their fields of concentration and to enroll in a minimal number of two in the other field.

Foreign language requirement: The Department of German will require of its candidates for the Ph.D. degree a good reading knowledge of the French language, equivalent to the passing of the course sequence
FIELDS OF STUDY AND DEGREES OFFERED

571-572-573 with a final grade of at least B. With the consent of the Graduate Committee of the Department of German, any other language may be substituted for French, if the student's research or dissertation topic warrants such substitution. The language requirement may be fulfilled either by examination or by completing satisfactorily the course sequence 571-573, if such a sequence is offered in one of the language departments.

Principal fields for specialization and research: Candidates may choose any pertinent field in German literature, Germanic philology, or linguistics, including Nordic languages.

HISTORY

Prof. Harry L. Coles, Chairman, 108 University Hall, 216 North Oval Drive
Prof. Sydney N. Fisher, Graduate Committee Chairman

Graduate degrees offered: Master of Arts, Doctor of Philosophy, Certificate in Russian Area Studies

Admission requirements not stated in the general Graduate School section: An applicant whose undergraduate grade-point average is lower than 3.0 is required to take the Graduate Record Examination.

Specific fields of knowledge required in the minimal master's program: The Department requires Introduction to Historical Research in American History or in European History and two seminars in history. A thesis is required of all students.

Specific fields of knowledge for which all doctoral students are held responsible: Candidates must satisfactorily complete two courses in historiography and two seminars beyond the two required for the master's degree. Of the total of four seminars, one must be in European history and one in American history. Exceptions are made for students in such fields as East Asian history and in other special cases.

Specific foreign languages accepted or required: Before a student may take the General Examination for admission to candidacy for the Ph.D., his adviser will designate to the Chairman of the Graduate Committee of the Department of History which languages, if any, the student is required to know and how these requirements have been met.

Principal fields for specialization and research: Students may choose from the following categories: ancient history; Greek and Roman history; Medieval history; Renaissance and Reformation; early modern and contemporary Europe; Slavic Europe; expansion of Europe; history of England, the Middle East, and East Asia; Jewish history; colonial America; political, economic, and social and intellectual history of the United States; slavery controversy and New South; military, diplomatic, and constitutional history; Latin America; and history of science.

Significant library or research facilities available to students in this department: The Main Library houses large collections in the above mentioned fields; the holdings of the Ohio Historical Association and the archives of the state of Ohio, both located in Columbus, are open for the use of graduate students in history.

HOME ECONOMICS

Prof. Lois A. Lund, Director, 235 Campbell Hall, 1787 Neil Avenue
Prof. Lois Gilmore, Graduate Committee Chairman
Professors Julia I. Dalrymple, Ruth Deacon, Marie Dirks, Dora Lois Gilmore, Eloise Green, Helene Heye, Mary Lapitsky, Virginia Vivian, Eva D. Wilson; Associate Professors Rachel Hubbard, Fern Hunt, Francelle Ma-lock, Esther Meacham, George Mountney, Claribel Taylor; Assistant Professors Robbie Blakemore, Claire Lehr.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: The applicant must have an undergraduate major in an area of home economics or closely related field, with basic courses in three of the following: biological science, fine arts, physical science, and social science.
Specific fields of knowledge required in the minimal master's program: Plan A. The major area of concentration should not exceed 30 quarter hours, including thesis and special problems related to the thesis. The remaining credits should include research methods and/or statistics and supporting courses from areas relating to the specialization.

Plan B. In addition to the Graduate School requirements, a course in research methodology and an individual investigation are required. Credits in individual studies (including the individual investigation) are limited to 15 quarter hours.

Selection of Plan A or B should be made no later than the quarter in which 35 credit hours are completed.

Specific fields of knowledge for which all doctoral students are held responsible: Areas in home economics relate closely to the natural sciences, social sciences, and the fine arts; therefore, each candidate is expected to complete coursework and be examined in a minimum of two areas related to the major field of concentration. For example, students concentrating in food and nutrition may include physiology and sociology as part of their programs.

Foreign languages required: None.

Principal fields for specialization and research: The School offers the following major areas: family and child development (with supporting work in the social sciences); food and nutrition (with supporting work in the physical and biological sciences); home economics education (with supporting work in education or psychology); home management, housing, and equipment (with supporting work in the natural or social sciences); and textiles and clothing (with supporting work in art, social sciences, or natural sciences).

Significant library or research facilities available to students in this school: The Home Economics Library, a branch of the Main Library, carries periodicals and references specific to the various home economics subject matter fields. Students also use the Main Library and such branch libraries as those in social work, medicine, education, and art.

There are well-equipped laboratories for instruction and research in all academic areas in the school.

HORTICULTURE AND FORESTRY

Prof. Freeman S. Howlett, Chairman, 152 Horticulture, Forestry, and Food Technology Center
Professors Howlett, Alban, Beattie, Brown, Bullard, Cahoon, Geisman, Gould, Hartman, Hill, Kiplinger, Kretchman, Reisch; Associate Professors Gallander, Kawase, Tayama; Assistant Professor Kozel.

Graduate degrees offered: Master of Science, Doctor of Philosophy

The Department of Horticulture and Forestry offers a comprehensive graduate program in which the extensive coursework is designed to broaden and deepen the base of the student's knowledge of the field as a whole. Thus, the culminating research and final dissertation are kept in the proper relationship to the total process. Such a program, covering major scientific contributions in horticulture and allied fields of botany and chemistry, necessarily expands student aptitude and capacity as well as knowledge of the area of specialization.

Principal fields for specialization and research: The principal fields for specialization and research are floriculture and landscape horticulture, fruits (pomology), vegetable crops (olericulture), and areas of processing and technology. Certain general horticultural courses offered by the Department are taken by graduate students in each of these departmental subdivisions.

Within the production fields special attention is given to plant nutrition and plant development, plant improvement by breeding and selection, and anatomical and cytological problems specifically related to the culture of horticultural plants. The effects of light, temperature, moisture and growth regulators upon plant development are of special importance in the graduate program. Chemical weed control and the post-harvest physiology of fruit, vegetable, flower and ornamental plantings have been allotted increased attention as changes in these fields demand. In processing and technology, quality evaluation and control, improvement of processed foods, and the study of specific unit operations as related to process efficiencies receive emphasis. The effects of plant characteristics on processing requirements and grade relationship are likewise considered, and appropriate attention is given to preservation and methodology.

Admission requirements not stated in the general Graduate School section: Prior to
admission, certain courses on the undergraduate level are recommended; nonmajors in horticulture as undergraduates must make up deficiencies.

Specific fields of knowledge required in minimal master's program: In addition to the requirements of the Graduate School for the master's degree, candidates should have had acceptable courses in advanced horticulture, plant physiology, biochemistry, microbiology, plant breeding, and plant nutrition. Additional courses required will depend on the student's area of specialization and recommendations of the adviser. A thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: Graduate students enrolled for the Doctor of Philosophy degree must select in consultation with their advisers advanced courses within the Department and various supporting departments; these may include advanced courses in such areas as botany, plant physiology, genetics, statistics, soil physics, biochemistry, soil chemistry, physical chemistry, microbiology, and spectroscopic chemistry.

Foreign languages required: None.

Significant library or research facilities available to students: Specialized laboratory and greenhouse facilities are available for the various types of research. A modern food processing plant is well equipped for work in processing and food technology. New laboratories designed for chemical and physiological research on horticultural problems offer the graduate student special opportunities for such work. In addition, the particularly well-equipped laboratories of the Ohio Agricultural Research and Development Center are available for research on a wide range of problems. Library facilities are available both at Columbus and at Wooster.

HOSPITAL AND HEALTH SERVICES ADMINISTRATION

Prof. Donald W. Dunn, Director, M-118 Sterling Loving Hall


Graduate Degrees offered: Master of Business Administration in Hospital Administration.

Admission requirements not stated in the general Graduate School section: Letters of recommendation are required. An interview is also required, at which time careful evaluation of the candidate's personal qualifications is made. Selection of candidates for admission is influenced by these and past academic performance.

Specific fields of knowledge required in the minimal master's program: The basic core curriculum for the degree Master of Business Administration (M.B.A.) will serve as a base for the graduate program in hospital and health services administration. This core requires 24 specified credit hours in business organization, 6 in accounting, and 3 in economics, plus 9 credit hours from suggested electives in business organization, economics, sociology, and social service. Eighteen credit hours are required in specified hospital and health services administration courses provided by the School of Allied Medical Professions. A thesis is not required.

Principal fields for specialization and research: Specialization in hospital administration and the administration of health care delivery is available.

Significant facilities available to students: The graduate program in hospital and health services administration has the full complement of educational and research resources of Business Administration upon which to draw and, in addition, a highly qualified faculty in the patient care areas including physicians, all of whom are members of the University faculty; libraries, including the Health Center branch of the University Library; and the University hospitals and affiliated hospitals.

INDUSTRIAL ENGINEERING

Prof. David F. Baker, Chairman, Systems Engineering Building, 1971 Neil Avenue

Prof. William T. Morris, Graduate Committee Chairman

Professors David F. Baker, Albert B. Bishop, Robert S. Green, Harry D. Moore, William T. Morris, Paul M. Pepper, Thomas H. Rockwell; Associate Professors Richard L. Francis, Walter C. Giffin, Donald R. Kibbey, Robert F. Miller; Assistant Professors John B. Neuhardt, George L. Smith.

Inquiries concerning graduate work should be addressed to the Chairman of the Graduate Committee.

Graduate degrees offered: Master of Science, Doctor of Philosophy
The graduate programs of the Department seek to provide professional preparation and research training in operations research, management science, human factors engineering, and various advanced areas of industrial engineering. Opportunities for research experience include those provided by the Department's Systems Research Group, which conducts a substantial continuing program of sponsored research. Graduate faculty advisers work with each graduate student to plan a program of study suited to his individual background and objectives. It is the aim of the Department to provide broad scientific training with elections from mathematics, psychology, sociology, economics, and other relevant disciplines. Areas of specialized study and research available within the Department include operations research, systems analysis and design, human factors engineering, control theory, management science, decision theory, process control, production processes, organization theory, mathematical programming, systems simulation, and information systems design.

The Department is able to provide certain opportunities for employment in full- or part-time research positions in connection with its program of sponsored research. In addition, a number of teaching associate and teaching assistant positions are available.

Admission requirements not stated in the general Graduate School section: The student must be a graduate of an ECPD-accredited engineering curriculum or an acceptable curriculum in one of the pure or applied sciences.

Specific fields of knowledge required in minimal master's program: Probability theory, statistics, programming, operations research, and electives from such areas as human factors engineering, systems analysis, decision theory, control theory, advanced operations research, and management science are required. A thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: Probability theory, statistics, operations research, and systems analysis and design. The Department does not have a foreign language requirement for the Ph.D. degree.


JOURNALISM

Prof. William E. Hall, Director, 205 Journalism Building, 242 West 18th Avenue
Prof. Galen R. Rarick, Graduate Committee Chairman

Graduate degree offered: Master of Arts

Admission requirements not stated in the general Graduate School section: Applicants must have a basic background in journalism, as demonstrated by completion of undergraduate courses or by professional performance, or have a record of outstanding scholarship in the liberal arts. For the two-year master's program (including a foreign internship) in international journalism, the applicant must be fluent in at least one foreign language spoken in the part of the world in which the student intends to specialize.

Specific subjects or fields of knowledge required in the minimal master's program: The 45 or more hours of graduate credit must include a minimum of 9 hours outside journalism and a minimum of 15 hours in journalism, including at least 6 hours in journalism seminars or courses numbered 801 through 813. Maximum credit for the thesis is 9 hours.

Significant library or research facilities available to students in the School: Facilities include a library of more than 2,000 volumes and many newspapers and periodicals.
LINGUISTICS

Prof. Ilse Lehiste, Chairman, 411 University Hall, 216 North Oval Drive

Prof. Charles J. Fillmore, Graduate Committee Chairman

Professors Charles J. Fillmore, David A. Griffin, Ilse Lehiste, Francis L. Utley; Associate Professors Catherine Callahan, D. T. Langendoen, Paul Pimsleur, Leroy F. Meyers; Assistant Professors Gabrell Drachman, George M. Landon, David L. Stampe.

Graduate degrees offered: Master of Arts, Doctor of Philosophy

Admission requirements not stated in general Graduate School section: A student who has not received the B.A. degree in linguistics from The Ohio State University is expected to have completed the equivalent of Linguistics 600 and 611 or to make up these courses in the first two years of his study at The Ohio State University. A student entering the doctoral program with a master's degree from some other department (or some other institution) is required to demonstrate a level of competence equivalent to that required for the master's degree by taking the master's examination at some time during the first two years of study toward the doctorate.

Specific subjects or fields of knowledge required in the minimal master's program: Before submitting the thesis and taking the comprehensive examination, the student must demonstrate a reading knowledge of either French or German, and another major language related to his professional interests. The required coursework includes principles of linguistics, syntax, and phonology; field methods; language acquisition, or, alternatively, language typology; and one seminar, along with courses in a specialized area. The specialized area may be the history, phonetics, and structure of a language or family of languages or selected topics in anthropology, information science, mathematics, philosophy, psychology, or speech. Courses in historical linguistics, the history of linguistics, and non-Indo-European languages are also recommended.

The student must submit an acceptable master's thesis, after which he must pass a comprehensive examination. The Department of Linguistics does not offer the Plan B non-thesis option.

For requirements for the Master of Arts in the Teaching of English to Speakers of Other Languages (TESOL), see page 101; requirements for the certificate program in TESOL, are described on page 35.

Specific fields of knowledge for which all doctoral students are held responsible: In addition to the requirements listed for a Master of Arts degree, the Doctor of Philosophy candidate must have a two-quarter sequence in historical linguistics; transformational analysis; at least two advanced seminars in syntax, phonology, or historical linguistics; and one or more quarters of thesis research. He must also have training in the structure, phonetics, and history of a language or a language family other than his native language. He must have the equivalent of 10 credit hours in a non-Indo-European language (or languages).

The student must pass a General Examination, which will cover the fields of synchronic and diachronic linguistics as well as the student's area of specialization. After passing the General Examination, the student must offer a dissertation which is a significant contribution to linguistic knowledge. A final oral examination will be held after the approval of the dissertation.

Specific foreign languages accepted or required: The student must have a dictionary reading knowledge of two out of the following three languages: French, German, and Russian. In addition, he must have a thorough knowledge of a language, modern or classical, appropriate to his field of specialization. In most cases, "thorough" implies both a speaking and a reading knowledge. The requirement in foreign languages must be met not later than the quarter immediately preceding that in which the student is admitted to the General Examination.

Principal fields for specialization and research: Suggested topics for specialization and research include linguistic analysis of specific languages, historical linguistics, linguistic theory, history of linguistics, anthropological linguistics, phonology, semantics, mechanical translation, mathematical linguistics, and acoustic phonetics.

Significant library or research facilities available to students: The library has excellent holdings in the established fields of linguistics and language and is constantly increasing those in newer areas, particularly Slavic, Oriental, and African languages. Many journals, texts, and offprints are also available in the Depart-
ment's collection. Research activities in the Department include independent and government-sponsored research at the Linguistics Research Laboratory. The facilities of the Laboratory have recently been improved by the addition of a new Sonagraph, a Mingograph, a Trans-Pitch Meter, and an Intensity Meter.

MATHEMATICAL STATISTICS
A special curriculum leading to the Doctor of Philosophy degree in mathematical statistics is offered by the Department of Mathematics. This program permits a special concentration of studies in mathematical statistics for a student planning to research, teach, or practice in statistics. Regular Departmental Ph.D. requirements are modified to meet the special needs of these students. Besides the necessary knowledge in analysis and probability a student must exhibit a thorough grounding in the theory of statistical inference and a good knowledge from a selection of important areas in statistics such as analysis of variance, design of experiments, multivariate analysis, and nonparametric and order statistics. Practical experience consulting under faculty members as a graduate assistant in the Statistics Laboratory is encouraged.

MATHEMATICS
Prof. Arnold E. Ross, 150 Mathematics Building, 231 West 18th Avenue
Prof. Jesse M. Shapiro, Graduate Committee Chairman

Graduate degrees offered: Master of Science, Doctor of Philosophy
Admission requirements not stated in the general Graduate School section: Graduate work in mathematics presupposes high performance in the equivalent of 45 quarter hours in college mathematics. If this requirement is not met at the time of admission, the deficiency must be made up in excess of the regular requirements.

Specific subjects or fields of knowledge required in the minimal master's program: With the advice and approval of his advisor, a student may select one of two options to receive the master's degree. Plan A requires a thesis. Under Plan B no thesis is required but the student must have a satisfactory performance on a uniform Departmental comprehensive written and oral examination.

Specific foreign languages required (for the Ph.D. program): A dictionary reading knowledge or a suitable examination in two languages chosen from French, German, and Russian.

Principal fields for research or specialization: The Department of Mathematics offers a wide variety of opportunities for persons wishing to do graduate work. Among available fields for specialization and research are algebra, analysis, topology, number theory, and applied mathematics, including the theory of automata, probability, statistics, and logic. Advanced seminars in group theory, number theory, logic, functional analysis, applied mathematics, and statistics will be continued in 1969-70. A program of training and research under the general heading of Mathematical Exploration via the Computer began in the Autumn Quarter 1965. The Department is noted for its research activity, and graduate students can pursue thesis and dissertation studies under the close personal supervision of professors with outstanding research accomplishments.

Significant library and research facilities available to students in this department: In addition to the Main Library, students may use the Mathematics Library, which contains collections of journals and mathematical tracts.

MECHANICAL ENGINEERING
Prof. D. D. Glower, Chairman, 275 Robinson Laboratory, 206 West 18th Avenue
Professors E. O. Doebelin, L. S. Han, K. G. Hornung, C. D. Jones, S. M. Marco, C. W. McLarnan, W. L. Starkey, C. F. Sepsy, H. R. Velkoff; Associate Profes-
Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: All students interested in graduate work in mechanical engineering who have baccalaureate degrees in engineering or physics and who meet the requirements of the Graduate School are encouraged to apply to the Office of Admissions. An applicant having less than a B average in previous college-level work or whose baccalaureate degree is not from an ECPD-accredited department of mechanical engineering may be required to take additional undergraduate work.

Specific fields of knowledge required in the minimal master's program: The program of study is determined in conference with the student's adviser and with the approval of the Departmental graduate committee. A typical program includes subjects from mechanical engineering, mathematics, and other areas, the latter depending upon the student's interest and need.

Specific fields of knowledge for which all doctoral students are held responsible:Doctoral students are responsible for the general area of mechanical engineering, a specific area of specialization within mechanical engineering, mathematics, and on occasion within allied departments, the latter depending upon the student's interest and need. There is no Departmental requirement for a foreign language.

Principal fields for specialization and research: The Department programs courses in the following areas: automatic control, boundary layer theory, creative design, dynamics of machinery, electrofluidmechanics, environmental control, failure theory, fluid dynamics, gas turbines, heat transfer, internal combustion engines, kinematics, magnetohydrodynamics, measurement systems, mechanical design, nuclear technology, nuclear power plants, plasma dynamics, positive-displacement machinery, reliability, stress analysis, system analysis, thermodynamics, energy conversion, turbomachinery, and vapor cycle power plants.

Significant research facilities available to students in this department: Special facilities available for graduate research include Mach-Zehnder interferometer, dynamic analyzer for frequency and pulse measurement, fatigue and other materials testing machines including furnaces and induction heating facilities for elevated temperature studies, high voltage and magnetic equipment for magnetohydrodynamic and electrofluidmechanic studies, high-volume flow air and liquid flow handling equipment, environmental test chamber, refrigeration equipment for heat sinks, critical nuclear reactor, analog and digital computers, vibration measuring equipment, hot wire anemometer equipment, chromatograph, acoustical analyzer, thermodynamic properties laboratory, and nuclear radiation facilities.

MEDICAL MICROBIOLOGY

Prof. Henry G. Cramblett, Chairman, M-110 Starling Loving Hall, 320 West Tenth Avenue


Graduate degrees offered: Master of Science, Doctor of Philosophy

Specific subjects required in the minimal master's program: Course requirements are Medical Microbiology 624, 625, 754, 814, and 864 together with acceptable general courses in physiological chemistry. Plan B thesis option is not offered.

Specific fields of knowledge for which all doctoral students are held responsible: In addition to courses required for the master's program, Medical Microbiology 844 and immunology are required. There is no requirement for foreign language. The candidates should have an advanced knowledge of how the structure, physiology, and genetics of a parasite and host relate in the development of disease processes.

Principal fields for specialization and research: Research areas include etiology of sarcoidosis, bacterial phospholipases, pteridine biosynthesis, bacterial pathogenesis, tissue immunology, immunochemistry, viral synthesis, nucleic acids, mycoplasmas, fatty acid metabolism, membrane structure, host-parasite relationships of mycotic agents, and human viruses.
Significant library or research facilities available to students in this department: The Health Center Library and its branch at the Children's Hospital are available to students. Research space, equipment, and facilities for media preparation are located in Starling Loving Hall and Ross Hall of the Children's Hospital.

**MEDICINE**

Prof. James V. Warren, Chairman, N-1013, University Hospital, 410 West Tenth Avenue


**Graduate Degree Offered:** Master of Science

The Department of Medicine has developed a program of study and training leading to the degree Master of Science in the Graduate School. This program was developed to provide opportunity for the development of individuals capable of basic and clinical investigation, to furnish an opportunity for experience in fundamental disciplines, and to prepare participants for possible academic careers. The program requires satisfactory completion of an original research project and presentation of a thesis on the work, as well as formal coursework. Forty-five hours credit are required, 20 of which must be taken in departments other than the one in which the candidate has matriculated for the degree. Completion of these requirements usually covers a period of at least two years.

Further information regarding the program may be obtained from the office of the Department of Medicine or from the chairman of the graduate committee of the Department. Applications are to be made to the chairman of the graduate committee, and permission of the chairman of the department is required.

**METALLURGICAL ENGINEERING**

Prof. Mars G. Fontana, Chairman, 141A Metallurgical Engineering Building, 116 West 19th Avenue


**Graduate Degrees Offered:** Master of Science, Doctor of Philosophy

Principal field of specialization and research: The Department offers courses and conducts research in the following major areas: thermodynamics of metals, internal friction, aqueous corrosion, dislocation theory, oxidation, process metallurgy, fracture processes, diffusion, X-ray, casting of metals, field emission, nucleation and condensation, high temperature electrochemistry, point defects, transformation processes, and metal physics. A brochure describing the Department in detail is available by request from the Department of Metallurgical Engineering.

Specific requirements of the minimal master's program: Approval by the Department is necessary for Plan B (non-thesis) programs.

Specific field of knowledge for which all doctoral students are held responsible: Graduate students wishing to obtain the Doctor of Philosophy degree are responsible for the following areas of knowledge: physical metallurgy, thermodynamics, process metallurgy, theory of alloys, mechanical metallurgy, dislocation theory, X-ray theory, and corrosion.

The General Examination for the Ph.D. degree is given during the third week of the Autumn and Spring Quarters.

Language requirement: Two quarters of college language with B or better; three quarters of college language with C or better; dictionary examination in one language; foreign students are not required to have a third language; acceptable languages are French, German, and Russian.

**MICROBIOLOGY**

Prof. Matthew C. Dodd, Chairman, 210 Edith Cockins Hall, 1958 Neil Avenue

Prof. Robert M. Pfister, Graduate Committee Chairman

Professors: Jorgen M. Birkeland, Edward H. Bohl, Matthew C. Dodd, Paul N. Hudson (Emeritus), Colin R.
Macpherson, Chester I. Randles, Melvin S. Rheins, Samuel Saslaw, Grant L. Stahly (Emeritus), Harry H. Weiser (Emeritus), Oram C. Woolpert (Emeritus); Associate Professors Nancy J. Bigley, Thomas J. Byers, Frank W. Chorpennning, Richard A. Dilley (Adjunct), Patrick R. Dugan, Miltus P. Kreir, Marvin R. Lamborg (Adjunct), Robert H. Miller, Hilton H. Mollenhauer (Adjunct), Wayne B. Parrish, Robert M. Pfister, Minocher C. Reporter (Adjunct), Samuel Rosen, Ted Suie, George P. Wilson, David A. Wolff; Assistant Professors James I. Frea, Bruno J. Kolodziei, Benjamin N. Wise.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Curricula and facilities are provided for training and education of students with emphasis on biological phenomena at the cellular level.

Specific subjects required in the minimal master’s program: No previous work in microbiology is required before admission, but students should have suitable courses in mathematics, biology, physics, and chemistry. Suitable courses in the above fields will be required for advanced degrees in microbiology but not for admission. Students lacking these on admission may make them up during graduate study. An acceptable thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: All doctoral students are required to have or to secure an understanding of the basic concepts and technics of biology, chemistry, mathematics, and physics as well as those concerned with the various areas of microbiology.

In addition to the examinations required by the Graduate School, the student must pass oral and written preliminary examinations covering the fundamentals of microbiology and all of allied sciences by the end of the third quarter of the Ph.D. program, or three quarters after receiving the M.S. degree. There is no foreign language requirement for an advanced degree. Individual advisers may specify some requirements for the Ph.D. degree.

Principal fields for specialization and research: Cytology, general and pathogenic microbiology, immunology, physiology, ultrastructure of specialized plant and animal cells, food and environmental microbiology, virology, and veterinary microbiology. Joint research projects with other departments are undertaken frequently and doctoral candidates may participate in these.

All graduate students are required to participate in the teaching program.

Significant library or research facilities available to students: Library facilities for graduate students are excellent both in the local branch library and in other libraries on the campus. Students are provided with quarters for research either within the Department headquarters or in other buildings where interdepartmental research is being carried on. The supply of equipment for research is being increased continuously.

MINERALOGY

Prof. Wilfrid R. Foster, Chairman, 295 Watts Hall, 104 West 19th Avenue

Prof. Henry E. Wenden, Graduate Committee Chairman

Professors Ernest G. Ehlers, Wilfrid R. Foster, Duncan McConnell, Dan McLachlan, Jr., Henry E. Wenden; Associate Professor Rodney T. Tettenhorst.

Graduate degrees offered: Master of Science, Doctor of Philosophy

There are two major areas of graduate study:

(a) Earth Science Mineralogy: Field and experimental petrology; high-temperature mineral phase equilibrium, hydrothermal and high-pressure research; ore-mineral and industrial-mineral paragenesis; clay research.

(b) Material Science Mineralogy: Mineralogy applied to technological problems, using principles of phase equilibrium and crystal chemistry; fundamental mineralogical studies having significance for ceramic, chemical, and metallurgical industries; crystal growth, crystal physics, and crystal structures.

Admission requirements not stated in the general Graduate School section: Enrollment in the master's program requires at least a bachelor's degree in geology or a science or engineering. Acceptable courses in physical and historical geology, crystallography, mineralogy, chemistry, physics, and mathematics, if not taken for bachelor's degree, must be taken without graduate credit.

Enrollment in the Ph.D. program requires at least a master's degree in geology or in science or engineering, amplified where necessary, to include the minimal
master's requirements specified above and below.

Entering graduate students may be required to pass a Qualifying Examination to determine the adequacy of their backgrounds.

Specific fields of knowledge required in the minimal master's program: Of the 45 credits required, 30 must embrace courses in morphological and X-ray crystallography, microscopic mineralogy and petrography, crystal chemistry, thermochemical mineralogy, and mineralogy seminar. Also required are an acceptable thesis and a written final examination covering formal coursework and thesis area.

Specific fields of knowledge for which all doctoral students are held responsible: Of the 90 credits beyond the minimal master's requirements, 25 or more credits must include non-research advanced courses in the Department. Credits in related fields outside the Department may total 20 credits and must include physical chemistry. Up to 45 credits in research, leading to an acceptable dissertation, are allowed.

Specific foreign languages accepted or required: None is required for the master's or Ph.D. degree.

Significant library or research facilities available to students: The Orton Memorial and the Materials Engineering Libraries have extensive coverage of geological, mineralogical, and related engineering fields. A Departmental library covers selected areas of research interest.

Special equipment includes five X-ray units with accessories; optical goniometers; petrographic and reflected-light microscopes; quenching and hydrothermal furnaces; "belt" high-pressure unit; crystal-growth equipment; and thin-section and mineral collections.

**MUSIC**

Prof. Harold Luce, Director, 105 Hughes Hall, 1899 North College Road


Graduate degrees offered: Master of Arts, Master of Music, Doctor of Philosophy

Graduate study in music requires an acceptable undergraduate degree in music with distribution of courses in undergraduate study appropriate to the graduate major chosen. Approval for admission is established by evaluation of the student's transcript and GRE scores including advanced test in music. Placement examinations in theory, history, and performance, as well as a minimum keyboard skill, will be given the first week of the first quarter of residence. Deficiencies may be remedied by additional coursework.

Admission requirements not stated in general Graduate School section: All graduate students are required to take examinations to establish their competency in functional keyboard facility, history, principal performing medium, and theory. Results of these examinations are used in advising students.

Specific subjects or fields of knowledge required in the minimal master's programs: The Master of Arts program includes studies in a major area and a minor area in music and related studies outside music. The available areas in music are (a) music history, (b) music theory, (c) music education, (d) instrumental or vocal pedagogy.

Plan A (with thesis) requires 45 hours including minimums of 15 hours in a major area, 9 hours in a minor area, and 9 hours in related studies outside music and a maximum of 6 hours for thesis. A final comprehensive oral examination will be conducted by a three-member committee of which one member will represent an area other than the major.

Plan B (without thesis) is available in music education, pedagogy, and theory. It requires 50 hours including minimums of 18 hours in a major area, 12 hours in other areas of music, 9 hours in related studies outside music, and 11 elective hours which may include applied music. No more than one-half the total hours may be in the major area. Final comprehensive written and oral examinations covering the student's course of study will be conducted by a three-member committee of which one member will represent an area other than the major.

The Master of Music program provides major study of a single instrument or instru-
mental family, composition, or church music. The total requires a minimum of 45 hours of coursework of which 27 hours (including at least one recital or, for composition majors, the preparation of their scores for performance) may be in the major area. A final comprehensive oral examination will be conducted by a three-member committee of which one member will represent an area other than the major. The members of this committee shall have attended the student's major recital.

Specific fields of knowledge for which all doctoral students are held responsible: The Doctor of Philosophy degree signifies a general knowledge in the field of Western music and an exhaustive knowledge in the particular area of specialization. The General Examination for the degree is a written and oral examination composed around the objectives of the student's area of specialization. It includes, typically, the answering of general historical questions, the identification of scores and recorded excerpts from music literature, the analysis of representative compositions and documents, the solution of compositional problems, and other exercises for determining the competence of the candidate in his field of specialization.

Specific foreign languages accepted or required: A dictionary reading knowledge of French and German is normally required for the areas of music history and music theory. Music education does not require foreign language except when it is essential to the dissertation topic.

Principal fields for specialization and research in doctoral studies: Fields of specialization include composition, music education, history, and theory. Programs in these several specializations are cooperatively composed to provide appropriate competencies for the scholar, teacher, or administrator in collegiate or public school music. The dissertation may deal with an analytical, compositional, educational, historical, philosophical, or psychological problem in music about which material and supportive information are available or can be obtained.

Significant library or research facilities available to students: The holdings of the Music Library, housed in Hughes Hall, include 337 collected editions and monuments in music; 318 complete serial titles and 203 current periodical subscriptions; 34,655 books and scores, 13,187 recordings, 647 dissertations and theses, and 6,500 titles in the orchestral, band, and choral music collection. Among extensive microphotographic resources are over 4,350 titles of documents in music as well as a complete microfiche collections of recent research in music education, the complete Eastman publications in music, and the complete Kassel archive of German music of 2,241 titles. Further research facilities include a sound laboratory used for composition of electronic music and for physical and psychological measurement of musical phenomena. The testing program of the School of Music provides opportunity for the design and analysis of music tests. The variety of communities and educational institutions near the University provides numerous kinds of laboratory settings for behavioral studies in the teaching and learning of music.

NATIONAL SECURITY POLICY STUDIES
See page 100.

NUCLEAR ENGINEERING
Prof. Donald D. Glower, Program Chairman, 1133 Robinson Laboratory, 206 West 18th Avenue
Professor D. D. Glower; Adjunct Associate Professors D. C. Brunton, R. Redmond; Assistant Professors R. A. Krakowski, H. A. Kurstedt, Jr., J. E. Lynch, Jr.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: Each student must have a baccalaureate degree in engineering, physics, or chemistry from an accredited university.

Specific subjects or fields of knowledge required in the minimal master's program: The student's program of study is determined in conference with the student, his adviser, and the advisory committee. The program includes coursework in nuclear engineering, physics, mathematics, chemistry, and other engineering areas, the latter depending upon the student's interest and need. No foreign language is required.

Specific fields of knowledge for which all doctoral students are held responsible: The program pursued, with the approval of the advisory committee, must lead to mastery
of the fundamental principles of nuclear engineering and mathematics necessary for an adequate background in the field. No foreign language is required.

Principal fields for specialization and research: The interdisciplinary nuclear engineering program offers fields of specialization in the various aspects of economical utilization of nuclear energy. Included are the fission and fusion reactors, materials problems associated with these reactors, instrumentation, and radioisotopes and their industrial and research applications.

Significant research facilities available to students in this program: Students have available, on campus, laboratories and major equipment items, such as the 10 kw pool-type nuclear reactor, subcritical nuclear reactors, multichannel pulse height analyzers, various sources of radioisotopes, and other nuclear radiation detection equipment. Available to students through a cooperative agreement are the 2 mw and 10 mw research reactors of Battelle Memorial Institute and the Air Force (Wright-Patterson Air Force Base). An extensive collection of books, journals, and technical papers on nuclear engineering and related areas of engineering, chemistry, physics, and medicine is included in the Ohio State University Library.

NURSING

Prof. Imogene M. King, Director, 145 School of Nursing, 1585 Neil Avenue

Prof. Frieda I. Shirk, Graduate Committee Chairman

Professors Imogene M. King, Frieda I. Shirk; Associate Professors Gwendoline Bellam, Wilda G. Chambers, Eleanor W. Lewis, Frances M. Pease, Geraldine G. Price, Grayce Sills, Esther Sump; Assistant Professors Lillian Pierce, Frances Sparkman.

Graduate degree offered: Master of Science

The School of Nursing provides opportunity for students and faculty to participate in planning experiences that will help the student continue toward optimum total development as a person and as a professional practitioner. The focus is on the development of attitudes, understandings, and skills which will prepare the student for (1) teaching clinical nursing, (2) nursing service administration, (3) participating in nursing research and/or pursuing doctoral study.

Admission requirements not stated in the general Graduate School section: The student must be a registered nurse, be a graduate of a National League for Nursing accredited baccalaureate degree program, and have a cumulative point-hour ratio of at least 2.70 on a 4.00 scale.

Specific fields of knowledge required in the minimal master's program: All students must complete the following: (1) advanced clinical study in medical-surgical, pediatric, or psychiatric nursing; (2) teaching or administration; (3) trends and issues in nursing; (4) courses offered by other departments; (5) Plan A with a thesis or Plan B without a thesis.

Significant library or research facilities available to students in this school: The library in Hamilton Hall offers extensive holdings. All of the College of Medicine clinical facilities are available for use of the graduate students in nursing for study, patient care, and research. These include those facilities needed for the study of children and adults undergoing diagnosis or rehabilitation and those who have acute or long term illnesses.

NUTRITION

See page 100.

OBSTETRICS & GYNECOLOGY

Prof. John C. Ullery, Chairman, Room N-635 University Hospital, 410 West Tenth Avenue

Prof. Zeph J. R. Hollenbeck, Graduate Committee Chairman


Graduate degree offered: Master of Science

This department has now completed a re-assessment of its objectives in the field of graduate education. The new program has been designed to add elements enriching the old and providing a wider area over which the student may choose in-depth pursuit of an appropriate phase of this clinical area; to provide educational experiences in graduate academic scholarship and research; and, primarily, to meet the needs of the postdoctoral student at internship, residency, and fellow levels. Although
45 hours credit will be required, 20 of these hours will be taken in departments other than the one in which the candidate has matriculated for the degree. Information concerning its particulars should be addressed to the Chairman.

**OPHTHALMOLOGY**

Prof. Torrence A. Makley, Chairman, N-350, University Hospital, 410 West Tenth Avenue


Graduate degree offered: Master of Science

For the degree Master of Science, the Department of Ophthalmology requires 20 hours of instruction outside the Department. The choice of allied courses is arranged by conferring with the members of the Departmental graduate committee. A thesis is required. This program is intended to meet the needs of postdoctoral students at residency and fellow levels. The Frost Memorial Library is available to students.

**OPTOMETRY**

See Physiological Optics, page 85.

**OTOLARYNGOLOGY**

Prof. William H. Saunders, M.D., Chairman, N-820, University Hospital, 410 West Tenth Avenue

Professor W. Saunders; Associate Professor H. G. Birck; Assistant Professors W. Melnick, E. Nilo, D. Lim, A. W. Miglets, V. Vermeulen.

Graduate degree offered: Master of Science

This department has now completed a reassessment of its objectives in the field of graduate education. The new program has been designed to add elements enriching the old and providing a wider area over which the student may choose in-depth pursuit of an appropriate phase of this clinical area; to provide educational experiences in graduate academic scholarship and research; and, primarily, to meet the needs of the postdoctoral student at internship, residency, and fellow levels. Although 45 hours credit will be required, 20 of these hours will be taken in departments other than the one in which the candidate has matriculated for the degree. Information concerning its particulars should be addressed to the Chairman.

**PATHOLOGY**

Prof. Jack C. Geer, Chairman, M-112 Starling Loving Hall, 320 West Tenth Avenue

Prof. Emmerich von Haam, Graduate Committee Chairman


Graduate degrees offered: Master of Science, Doctor of Philosophy

Graduate studies are offered in the two broad fields of anatomical and clinical pathology. A candidate for study in the field of anatomical pathology must have a doctorate degree in either medicine, dentistry, or veterinary medicine. A candidate for study in clinical pathology may hold one of the above professional degrees or a baccalaureate degree in a field relevant to clinical laboratory medicine, such as medical technology, bacteriology, or chemistry.

Admission requirements not stated in general Graduate School section: Permission of the chairman of the Department is required of every student who wishes to obtain a graduate degree in pathology.

Specific subjects required in the minimal master's program: Fifteen credit hours of courses must be taken in other departments of the University as recommended by the adviser. A thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: Doctoral students must pass a general examination of the type of Board-qualifying examinations in either of the following: (1) pathological anatomy, including surgical pathology and clinical cytology; or (2) clinical pathology, including hematology, clinical chemistry, clinical microbiology, and immunohematology. There is no foreign language requirement.

Principal fields for specialization and research: Pathological anatomy, forensic pathology, surgical pathology, neuropathology, pediatric pathology, clinical cytology,
FIELDS OF STUDY AND DEGREES OFFERED

Experimental pathology, hematology, clinical microbiology, clinical chemistry, and immunohematology are offered by the Department.

Significant library or research facilities available to students in this department: Completely equipped research laboratories, including three electron microscopes; complete photographic service; Department library containing 16 current journals in pathology and clinical pathology; and resident library.

PEDIATRICS

Prof. Bruce D. Graham, Chairman, Children’s Hospital, 561 S. 17th St.

Prof. J. Philip Ambuel, Graduate Committee Chairman


Graduate degree offered: Master of Science.

Admission requirements not stated in general Graduate School Section: The applicant must be a graduate of an approved medical school pursuing advanced training in medicine, such as may be obtained by a resident in the Department of Pediatrics or a fellow in a related subspecialty. A thesis is required.

Principal fields for specialization and research: Research may be done in any discipline related to the field of medicine as it applies to the specialty of pediatrics. Examples include such areas as pulmonary physiology, cardiology, genetics, endocrinology, infectious diseases, toxicology, hematology, psychology, behavioral development, adolescent medicine, or ambulatory pediatrics.

Significant library or research facilities available to students in this department: A branch library is located at Children’s Hospital. Through it the entire O.S.U. library facilities are available. Research facilities include a clinical research center of six beds, the Ross Hall Research Building, the inpatient and outpatient facilities of Children’s Hospital, and the newborn nurseries of University Hospital.

PHARMACOLOGY

Prof. Bernard H. Marks, Chairman, 123 Hamilton Hall, 1645 Neil Avenue


Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in general Graduate School section: General requirements include qualifications in general biology, organic chemistry, and mathematics (preferably calculus). See Graduate Record Examination Requirements, page 16.

Specific subjects or fields of knowledge required in the minimal Master’s program: Dictionary reading knowledge of one foreign language in which there is a body of pharmacology literature; biochemistry, physiology, and pharmacology are required. A thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: Biochemistry, physiology, pharmacology, statistics, and experimental design. For admission to candidacy for the Ph.D. degree, the candidate may fulfill the foreign language requirement in one of two ways:

1. By demonstrating a comprehensive knowledge of a foreign language in which there is sufficient pharmacological literature. This can be done by earning the grade B or better in the third in the sequence of language courses designated for this purpose or by satisfactorily demonstrating the ability to translate, without the aid of a dictionary, representative pharmacological technical literature in the student’s own field.

2. By demonstrating a dictionary reading knowledge of two foreign languages in which there is a body of pharmacology literature. One of these two foreign languages must be German or Russian. For each foreign language, the requirement may be met by earning the grade B or better in the second of the sequence of courses designed for this purpose or by satisfactorily demonstrating the ability to translate, with the aid of a dictionary, repre-
sentative technical pharmacological literature in the student's area of interest.

Principal fields for specialization and research: The following major specialties are offered: relationship of chemical structure to biological activity, absorption, distribution and metabolism of drugs, site and mechanism of drug action, studies on radioactive-labeled drugs, endocrine pharmacology, cardiovascular pharmacology, pharmacology of steroid hormones, effect of drugs on bioelectric cell potentials, autonomic pharmacology, neuropharmacology, biochemical pharmacology, and toxicology.

Significant library or research facilities available to students in this department: An excellent health sciences library and a well-maintained private pharmacology collection are available. There are facilities for animal study and for biochemical and physiological experimentation. Modern instrumentation for recording physiological measurements and making biochemical and radioisotopic measurements and facilities for observing and recording the electric potentials from single cells with microelectrodes are available. An excellent array of modern chemical analytical instruments has been accumulated for the use of graduate students.

PHARMACY

Dean Lloyd M. Parks, 217E Pharmacy Building, 500 West 12th Avenue


Graduate degrees offered: Master of Science, Doctor of Philosophy

There are two major areas in the graduate program at the College of Pharmacy. One is based primarily on the physical and biological sciences and includes medicinal chemistry, which involves the synthesis of drugs and the study of the relationship between chemical structure and biological action; pharmaceutics and pharmaceutical chemistry, which is primarily concerned with the physical chemistry of reactions and processes involving drugs; pharmaceutical analysis, in which modern concepts of analysis are applied to the study of chemical and biochemical problems; pharmacognosy and natural products chemistry which is concerned with the study of drugs obtained from higher plants and microorganisms; and pharmacology, which deals primarily with the biological aspects of the interaction of drugs and other chemicals with living systems.

The other area is concerned mainly with behavioral, social science, and professional aspects and includes hospital pharmacy (Master of Science only) which is a combined graduate study—residency program; pharmacy administration, which integrates advanced studies in business, economics, marketing, and management with the profession of pharmacy; and social sciences in pharmacy, in which theories and techniques of the social sciences are applied to pharmacy and community health research.

Admission requirements not stated in general Graduate School section: An applicant must have a Bachelor of Science degree from an accredited college of pharmacy in the United States or a foreign college of pharmacy of comparable standards or a Bachelor of Science degree in a physical or biological science allied to the pharmaceutical sciences; e.g., chemistry, biology.

Specific fields of knowledge required in the minimal master's program: Within a reasonable period of time after admission, the candidate must complete a core curriculum in his principal field of specialization and must take a written qualifying examination as a test of adequacy of background, competency in the field, and capacity for independent work. A thesis is required of all students.

Specific fields of knowledge for which all doctoral students are held responsible: Within a reasonable period of time after admission, the candidate must complete the requirements of the master's program stated above, if they have not already been completed, or qualify to by-pass the master's degree.

Foreign language requirement: With the exceptions of the programs in hospital pharmacy, pharmacy administration, and social sciences in pharmacy which have no foreign language requirement, a dictionary reading knowledge of one foreign language is a requirement for the Ph.D. degree. Languages recommended are German, Rus-
sian, and French. Competence may be demonstrated either by examination or by successfully completing the appropriate courses or equivalent. The language requirement must be completed before the oral examination for admission to candidacy for the Ph.D. degree.

Significant library or research facilities available to students in this college: The College is well equipped in a new building to conduct advanced study and research in all of the pharmaceutical sciences and may also draw upon other departments for courses, facilities, and special equipment. The Pharmacy Library contains more than 12,000 volumes and receives more than 200 current periodicals.

PHILOSOPHY
Prof. Robert G. Turnbull, Chairman, 108 University Hall, 216 North Oval Drive
Prof. Virgil G. Hinshaw, Jr., Graduate Committee Chairman
Professors Marvin Fox, Virgil G. Hinshaw, Jr., Everett J. Nelson, Robert G. Turnbull, Morris Weitz; Associate Professors Richard Garner, Alan Hausman, Andrew Oldenquist, Paul Olscamp; Assistant Professors Wallace Anderson, Charles Kielkopf, Bernard Rosen.

Graduate degrees offered: Master of Arts, Doctor of Philosophy

Specific fields of knowledge required in the minimal master's program: A dictionary reading knowledge of either French or German is required. Master's candidates are examined in the fields of (1) history of philosophy, (2) logic, (3) ethics, and (4) metaphysics and epistemology. With respect to the thesis, Plan B may be chosen.

Specific fields of knowledge for which all doctoral students are held responsible: History of philosophy, ethics, logic, metaphysics, and epistemology.

Principal fields for specialization and research: Metaphysics, epistemology, deductive logic, inductive logic, philosophy of logic, ethics, theory of value, esthetics, history of philosophy (including the philosophy of any major philosopher), philosophy of science, philosophy of religion, philosophy of history, philosophy of mind, philosophy of language, and philosophy of mathematics. The faculty of the Department represents a wide diversity of interests, backgrounds, and points of view and encourages diversity among students.

Specific foreign languages accepted or required: A dictionary reading knowledge of two languages in which there is a significant body of philosophic literature is required. Normally, French and German are recommended, but Greek, Latin, or Russian may be substituted for French or German when it is essential for dissertation research.

Significant library or research facilities available to students in this department: The Main Library has an excellent and comprehensive collection of primary philosophic texts and secondary literature and commentary, analysis, and interpretation. Every important periodical in the field of philosophy is available. The Julius Gluck Memorial Library of Philosophy offers a supplementary collection for the use of graduate students and faculty.

PHYSICAL EDUCATION
Prof. Lewis A. Hess, Chairman, 216 Men's Physical Education Building, 337 West 17th Avenue
Prof. Margaret A. Mordy, Chairman, 201 Pomerene Hall, 1760 Neil Avenue
Prof. Bruce L. Bennett, Graduate Committee Chairman

Graduate degrees offered: Master of Arts, Doctor of Philosophy

Admission requirements not stated in general Graduate School section:
1. At least 15 quarter hours in professional education.
2. At least 24 quarter hours in health and physical education.
3. At least 9 quarter hours in anatomy, kinesiology, and/or physiology.

A candidate for a degree in health education must present an undergraduate major or minor in health and/or physical education, nursing, dental hygiene, or a biological science.

Specific subjects or fields of knowledge required in the minimal master's program: Students must take Physical Education 650 (Evaluation in Physical Education) and
Physical Education 885 (Methods of Research) unless equivalent courses have been previously taken. Option B (non-thesis program) is offered.

Specific fields of knowledge for which all doctoral students are held responsible: Doctoral students may concentrate in the area of health education or physical education. All students must also have a competency in another field by taking from 8 to 20 hours of coursework in that field. Some of these fields are sociology, psychology, higher education, educational administration, physiology, social administration, physical education, and health education. A foreign language is not required.

Principal fields for specialization and research: The School offers work in physiology of exercise, sociology, history, administration, philosophy, tests and measurements, evaluation, recreation and outdoor education, professional preparation, adapted physical education, and curriculum.

Significant library or research facilities available to students in this school: The School maintains a fully equipped research laboratory for research in motor learning, physical anthropometry, exercise physiology, maturation, and anatomy. There is also an excellent training room with the latest equipment, medical supervision, and a close working relationship with the College of Medicine, the College of Dentistry, and the University Health Service. Practical laboratory experiences are possible through the required physical education classes, the intramural sports program, the Saturday morning program for faculty children, community agencies, and work with students who have various disabilities.

PHYSICAL MEDICINE

Prof. Ernest W. Johnson, 112 Dodd Hall, 472 West Eighth Avenue

Professor Ernest W. Johnson; Associate Professors Saad Z. Nagi, Marvin H. Spiegel, Richard W. Stow; Assistant Professors John L. Melvin, George P. Taylor.

Graduate degree offered: Master of Science

This department has now completed a reassessment of its objectives in the field of graduate education. The new program has been designed to add elements enriching the old and providing a wider area over which the student may choose in-depth pursuit of an appropriate phase of this clinical area; to provide educational experiences in graduate academic scholarship and research; and, primarily, to meet the needs of the postdoctoral student at internship, residency, and fellow levels. Although 45 hours credit will be required, 20 of these hours will be taken in departments other than the one in which the candidate has matriculated for the degree. Information concerning its particulars should be addressed to the Chairman.

PHYSICS

Prof. E. Leonard Jossem, 1012 Alpheus W. Smith Laboratories, 174 West Eighteenth Ave.


Graduate degrees offered: Master of Science, Doctor of Philosophy

Areas of specialization and research facilities: Opportunities for graduate work are available in each of the following major areas in which the Department has active theoretical and experimental research programs: nuclear physics, atomic physics, molecular physics, solid state physics, low temperature physics, high energy physics, atmospheric physics, biophysics, and plasma physics.

Excellent research facilities are available in each of these fields of specialization. They are supported by machine shops, a graduate student shop, a technical operations laboratory and other specialized services of the Department, as well as by the University Computer Center. The Cole Memorial Library of Physics and Astronomy houses the Departmental collection of over 27,000 volumes and more than 300 periodicals. The facilities of several other laboratories such as the Argonne National Laboratory are available to qualified graduate students through cooperative programs.
Departmental admission requirements: Graduate study in physics presupposes a superior undergraduate record in physics and mathematics including differential equations and advanced calculus. All applicants are advised to take the Graduate Record Examinations, including the Advanced Physics Section.

The successful completion of a sequence of 12 semester hours or 20 quarter hours of undergraduate courses in a foreign language (Russian, French, or German) is regarded by the Department as an entrance requirement for the Ph.D. program. Students who have not completed this work at the time of first registration may fulfill the requirements in any of several ways during the first two years of study. There is no language requirement for the master's degree.

M.S. and Ph.D. programs: Master's programs are planned on an individual basis by the student and his faculty adviser. Both Plan A and Plan B options (see page 25) are available; a detailed statement of Departmental requirements for these plans may be obtained on request from the Department of Physics. The Department is also receptive to requests for special programs responsive to the needs of students in elementary and secondary education and other areas.

Individual Ph.D. programs, approved by the student's faculty adviser, must lead to mastery of the fundamental areas of physics and mathematics necessary for productive scholarship in physics. Details of the General Examination for Admission to candidacy for the degree Doctor of Philosophy may be obtained on request from the Department of Physics.

**PHYSIOLOGICAL CHEMISTRY**

Prof. David G. Cornwell, Chairman, 214 Hamilton Hall, 1645 Neil Avenue

Prof. Keith E. Richardson, Graduate Committee Chairman


Graduate degrees offered: Master of Science, Doctor of Philosophy

Specific subjects or fields of knowledge required in the minimal master's program: A dictionary reading knowledge of one language (German, French, or Russian) or a minimum grade of B in a specified equivalent language course.

The following subjects are required: general biochemistry; advanced organic chemistry; advanced biochemistry; biochemistry seminar; thesis research. Plan B thesis option is not offered. See Graduate Record Examination requirements on page 16.

Specific fields of knowledge for which all doctoral students are held responsible: The candidate is held responsible for a general knowledge of organic and physical chemistry and their particular applications to biological systems. He should have a minor in some biological science; e.g., physiology, genetics, microbiology, botany, zoology. His basic biochemistry will encompass an understanding of the structure and function of biological compounds, enzymology, and intermediary metabolism. At the advanced level, a knowledge of the experimental approaches and trends of current biochemical research is required.

Specific foreign languages accepted or required: A dictionary reading knowledge of one modern language which is approved by the student's adviser and the Department Graduate Committee is required for the Ph.D. This requirement may be met by (a) three quarters of undergraduate-level language training or equivalent, (b) a satisfactory score on the language proficiency examination administered by the language departments, (c) a minimum grade of B in a specified language course, or (d) a satisfactory score as determined by the Department Graduate Committee on the Educational Testing Service language examination.

Principal fields for specialization and research: Research areas include carbohydrate chemistry; chemistry and metabolism of lipids; protein structure; nucleic acid metabolism; bioenergetics; enzyme purification, kinetics, and reaction mechanism; inorganic biochemistry; neurochemistry; metabolic disorders and nutrition; clinical biochemistry; psychoactive drugs; mechanism of action of protein and steroid hormones; membranes and cellular organization; electron microscopy.
Significant library or research facilities available to students in this department:
The Department has ample research equipment, cold rooms, and access to animal research facilities. It is ideally located adjacent to the Health Center Library. Faculty appointments in other departments make available the facilities of many clinical departments in the allied University Hospitals.

PHYSIOLOGICAL OPTICS

Prof. Frederick W. Hebbard, Chairman, 111 Optometry Building, 338 West Tenth Avenue
Prof. Richard M. Hill, Graduate Committee Chairman
Regents Professor Glenn A. Fry; Professors H. Richard Blackwell, Frederick W. Hebbard, Richard M. Hill; Associate Professors Jess Boyd Eskridge, Stanley W. Smith, Bradford W. Wild; Assistant Professor Carl R. Ingling, Jr.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Physiological optics may be defined as the science of vision. As set forth by Helmholtz over a century ago, it includes the optics, physics, and chemistry of the visual system; visual anatomy and physiology; and visual psychology and perception. It also includes the study of the visual environment and the application of knowledge to improve visual performance. A wide demand exists for individuals competent in physiological optics. Positions are available in teaching and research, and with industry, the government, and the armed forces.

Admission requirements not stated in the general Graduate School section: The student must have a satisfactory undergraduate record in mathematics (including differential and integral calculus), physics, zoology, anatomy, physiology, psychology, and physiological optics. If the requirements are not met by the time of admission, any deficiencies must be made up. An advanced student in the College of Optometry may also be admitted to the Graduate School to obtain concurrent credit toward the O.D. and M.S. or Ph.D. degrees, as described on page 24.

Specific fields of knowledge in the minimal master's program: Work in other departments may be recommended according to the needs of the individual student. A thesis is required. Not later than two quarters before the time in which the candidate expects to receive the master's degree, he must select the subject of his thesis and the instructor with whom he elects to work. A reading knowledge of German is highly desirable.

Specific field of knowledge for which all doctoral students are held responsible: All students must acquire a reading knowledge of both French and German, or meet an alternate approved by the Graduate Committee. Before being admitted to candidacy for the doctoral degree, the applicant is required to pass a written examination on physiological optics, physical optics, anatomy of the eye and nervous system, physiology, and psychology of vision. These written examinations are followed by an oral examination required by the Graduate School.

Significant library or research facilities available to students in this department: The Topaz Memorial Library of Visual Science is located in the Optometry Building. Students also have access to the Health Center Library, as well as to collections in the Main Library.

The following well-equipped laboratory facilities are available for research in various fields of specialization in physiological optics: geometrical and physical optics; biological optics and control mechanisms; color vision; visual acuities and sensitivities; photobiology; ocular physiology, histology, and neurophysiology; information theory; binocular vision; eye movements; illumination; interpretation of visual impressions; and the application of this knowledge in providing comfortable and efficient use of the eyes for particular visual tasks.

PHYSIOLOGY

Prof. Robert C. Little, Chairman, 312 Hamilton Hall, 1645 Neil Avenue

Graduate degrees offered: Master of Science, Doctor of Philosophy
Special admission requirements not stated in the general Graduate School section: The applicant must secure the approval of the Graduate Committee of the Department of Physiology, regardless of undergraduate standing, and furnish three supporting academic letters.

The following course prerequisites are required: mathematics up to calculus, physics, general zoology, anatomy, analytical chemistry, and organic chemistry.

Specific subjects required in the minimal master's program: Course requirements are human physiology, three seminars, one advanced physiology course, and others to be selected by the Advisory Committee.

Specific fields of knowledge required in the minimal master's program: The student must take or have had acceptable courses in plant pathology, general botany, mycology, plant physiology, microbiology (bacteriology), genetics, zoology, organic chemistry, physics, algebra, trigonometry, and biological statistics. A thesis is required of all M.S. candidates.

Specific fields of knowledge for which all doctoral students are held responsible: In addition to those listed for the master's program are biological chemistry and advanced courses in plant pathology and botany. No foreign languages are required.

Principal fields for specialization and research: Fungal diseases, plant virology, bacterial diseases, plant nematology, physiology of pathogens, ecology of root rots, ecology of foliar diseases, genetics of resistance, chemical and biological control of plant diseases, and diseases of field crops, horticultural crops, and ornamental crops.

Significant library or research facilities available to students in this department: Library collections in the agricultural and biological sciences are unusually good. Controlled environmental chambers, laboratories, and greenhouse facilities are available for general plant pathology work. In addition, at the Ohio Agricultural Research and Development Center at Wooster, Ohio, special research facilities are available including laboratories well equipped for virology and physiology research, electron microscope facilities, controlled environment rooms, extensive greenhouses and field plots, and suitable laboratories for research in other aspects of plant pathology.
had undergraduate majors in the field. Some courses in the fundamentals of government are advisable for those who have not had the undergraduate major.

**Specific subject required in the minimal master's program:** A course in methodology is required—Political Science 790 (Scope and Methods of Political Science) or its equivalent. A thesis is required.

**Specific fields of knowledge for which all doctoral students are held responsible:** Each doctoral student is required to choose one of the following subdivisions of political science as his major field:

1. American government and institutions
2. Comparative and foreign governments
3. International relations
4. Political theory and jurisprudence
5. Politics, political behavior, and political processes.

Each student selects either one major field and three minor fields or one major field, two minor fields, and one cognate field. For purposes of the qualifying examinations each of these principal fields is further subdivided into three to five subdivisions with one to three options available to the candidate in each field, depending upon whether it has been selected as a major or a minor field.

**Specific foreign languages accepted or required:** Dictionary knowledge of one modern foreign language or successful completion of a two-quarter Departmental offering in quantitative methods. Option is selected by adviser in consultation with student.

**Principal fields for specialization and research:** The Department offers the following: American government and institutions; comparative and foreign governments; international relations; organization and law; political theory and jurisprudence; and politics, political behavior, political processes, and national security policy.

**Significant library or research facilities available to students in this department:** Mershon Library and Inter-University loans are available. Often candidates go to Washington to use the facilities of the Library of Congress. Doctoral candidates may apply for foundation grants or fellowships to go abroad for dissertation material.
Graduate degree offered: Master of Science

Admission requirements not stated in general Graduate School section:

*Aerospace and Occupational Medicine.* Applicants for the formal training program in aerospace and occupational medicine must present evidence of having completed at least one year of rotating or straight internship in a hospital accredited by the American Medical Association.

*Nutrition.* Applicant must be a graduate of an approved program in dietetics, have had a dietetic internship, and at least one year of hospital experience for admission to the degree program. (Plan B option)

*Special programs.* In exceptional cases and with approval of the Department Chairman, students will be admitted for degree (Plan B thesis option) programs in preventive medicine without satisfying above requirements in respect to internship stated above.

Significant library or research facilities available to students in this department: In addition to approximately 85,000 volumes in Health Center Library, the Department has a collection of 1,500 specialized volumes and journals not generally available. Extensive equipment and laboratory facilities are available to the graduate student.

**PSYCHIATRY**

Prof. Ian Gregory, Chairman, 071 Upham Hall, 473 West 12th Avenue

Prof. Rudolf Kaelbling, Graduate Committee Chairman

Professors R. Dean Coddington, Samuel A. Corson, Simon Dinitz, Roland Fischer, Eugene W. Green, Ian Gregory, Leopold Liss, Philip A. Marks, Ralph M. Patterson, Saul Siegel; Clinical Professor Dwight M. Palmer; Associate Professors Ronald Fox, Harold Goldman, Rudolf Kaelbling, John Kangas, Walter Knopp, Robert H. McCluer; Clinical Associate Professors W. Hugh Missildine, Irving Pine; Assistant Professors Malcolm L. Gardner, Peter H. Gwynne, Herbert H. Krauss, George J. Learmonth, Lewis Lindnew, Lawrence Monroe, George Taylor, Instructor G. Richard van Sickle.

Graduate degree offered: Master of Science

Specific subjects or fields of knowledge required in the minimal master's program: Clinical psychiatry, psychopathology, psychotherapy, basic behavioral sciences; clinical neurology; neuropathology, basic neurological sciences; and thesis.

Principal fields for specialization and research: General psychiatry, child psychiatry, clinical psychology, and basic behavioral sciences.

Significant library or research facilities available to students in this department: Extensive research facilities and supervision are available. The Departmental library contains more than 4,000 volumes.

**PSYCHOLOGY**

Prof. Robert J. Wherry, 321 Arps Hall, 1945 North High Street

Prof. John E. Horrocks, Graduate Committee Chairman


Graduate degrees offered: Master of Arts, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: The applicant must fill out special psychology forms available from the Department. His application must receive a review by the personnel committee and Departmental area. A special booklet is available from the Department office. An aptitude test score is requested. See Graduate Record Examination requirements, page 16.

Specific subjects or fields of knowledge required in the minimal master's program: Normally only 45 hours including the thesis are required, but the Department has a terminal two-year Master of Arts program in student personnel. A thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: The core program consists of Psychology 809 (History and Systems), 810 (Research Methodology), and 828 (Correlation Analysis). The Department has no foreign language requirement.

Principal fields for specialization and research: Experimental, physiological, engineering, statistical-mathematical, clinical, counseling, educational, developmental, so-
cial, industrial, school, and psychology of exceptional children are offered.

Significant library or research facilities available to students in this department: The Human Performance Center and Physiological-Comparative Laboratories at the Research Center add to the regular Departmental facilities. An excellent computer system with many programs is available. A special statistical-mathematical library is available.

RADIOLOGY

Prof. Sidney W. Nelson, Chairman, N-208 University Hospital, 410 West Tenth Avenue

Graduate degree offered: Master of Science in Radiology

Admission requirements not stated in general Graduate School section: Students must have completed or be enrolled in an approved residency training program in radiology. They must have a good working knowledge of radiation physics, mathematics, and radiobiology. These subjects are taught on a continuing basis in the Department of Radiology, and radiology residents are usually competent in these subjects by the end of the second year of residency training, at which time most students will consider starting work toward their master's degrees.

Specific subjects or fields of knowledge required in the minimal master's program: The following are required: radiation physics, physiology (radiobiology), education (teaching of sciences), biology (interpretation of biological data), and journalism (magazine writing). A thesis will usually be required. However, under certain circumstances a thesis may not be required, in which case the candidate shall complete a minimum of 50 hours of graduate course work and perform satisfactorily on a Department comprehensive written examination. This option is available because certain students may find that an intensive investigation of the problem of major interest to them is best accomplished by devoting all available time to study, rather than toward the carrying out of a specific research problem. Participation in teaching is encouraged to the extent that it does not interfere with the student's program; it is not required.

Principal fields for specialization and research: General radiological diagnosis, diagnostic methods, cardiovascular and neurological radiology, contract media and anesthetic agents, biological behavior of malignant neoplasms, and new radioactive materials.

Significant library or research facilities available to students in this department: The Radiology Departmental library contains an excellent collection of texts, reference books, and journals. Research facilities include the newest diagnostic and therapeutic equipment in addition to a newly equipped Nuclear Medicine Laboratory. A wide array of electronic and dosimetric equipment is available in the Radiation Research Laboratory, where the Ohio State University Office of Radiation Safety is located. In this laboratory new equipment can be designed, radiation sources calibrated, and unknown radioactive elements can be identified. The Health Center Research Laboratory is available for animal research.

ROMANCE LANGUAGES AND LITERATURES

Prof. Eleanor W. Bulatkin, Chairman, 114 Derby Hall, 154 North Oval Drive
Prof. Martha E. Frosch, Graduate Committee Chairman
Professors Richard H. Armitage, James C. Babcock, Eleanor W. Bulatkin, Charles Carlut, Hugh M. Davidson, Martha Frosch, David A. Griffin, Walter Meiden; Associate Professors Pierre Astier, Margarita Levisi, Albert N. Mancini, Aristobulo Pardo; Assistant Professor Robert E. Mitchell; Visiting Professor Hans E. Keller.

Graduate degrees offered: Master of Arts, Doctor of Philosophy

The Department offers programs leading toward master's and doctoral degrees with major emphasis on French or Spanish literature and toward a doctoral degree in Romance linguistics. Minor programs in Italian, Provencal, and related areas are also offered.

Specific subjects or fields of knowledge required in the minimal master's program: For the master's degree, two plans are offered: under Plan A (with thesis), the candidate must complete the courses entitled Old French (Spanish), History of the
French (Spanish) Language, and Introduction to Methods in the History and Criticism of Literature, together with one seminar in literature. Elective hours must bring the total to a minimum of 45, including 10 for the thesis. Under Plan B (without thesis), the required courses are the same, and a minimum of 50 hours of coursework must be completed, including at least two seminars. Under both plans, the student must pass a comprehensive examination based on a reading list of prescribed texts. Under Plan A, he will be examined on four areas of the list; under Plan B, he will write on five areas.

Specific fields of knowledge for which all doctoral students are held responsible: The student must have met all requirements for a Master of Arts degree, as defined in this department, other than a thesis. He must have a concentration either in literature or in linguistics. If he chooses literature, he must demonstrate competence in his major language as a whole and in a minor field in a second Romance language. Preparation for the minor examination shall include 15 hours of graduate-level courses acceptable to the minor adviser. The student shall demonstrate a knowledge of the history of his major language at a level represented by 812 and 813 and a knowledge of the medieval literature of his major language beyond the level of 821. In addition, the student shall be responsible for the history of his minor language at the level of 811. All doctoral candidates who choose literature must demonstrate a reading knowledge of a third Romance language and German.

The student who chooses linguistics as his field of concentration shall pursue a program designed to provide him with a general knowledge of the field of Romance linguistics and to acquaint him with the problems and techniques of linguistic investigation, both descriptive and historical. The minimum areas to be covered by the program shall include the detailed history of two Romance languages and a general knowledge of the history of a third.

For his minor field the student may select either a Romance literature other than that offered for the master's program or an additional area in linguistics. He should also demonstrate proficiency in Latin and German as early as feasible in the course of his program.
FIELDS OF STUDY AND DEGREES OFFERED

M.A. in the Department, or equivalent knowledge, and a reading knowledge of French and German. Transfer students must pass the normal M.A. examinations before being considered Ph.D. candidates. A student receiving the M.A. under Plan B must complete the requirement in Old Church Slavonic, and must write an essay which is equivalent to the normal M.A. thesis.

For specialization in Russian literature:
1. The history and development of Russian literature from the beginning to the present, including historical and intellectual environment
2. Oral and written competence in Russian, including orientation in its history and structure
3. Reading competence in and general knowledge of the literature of at least one additional Slavic language.

For specialization in Slavic linguistics:
1. Knowledge of the structure and history of the language of specialization and another Slavic language, plus reading competence in a third Slavic language
2. Orientation in general linguistics and in the interrelation of the Slavic languages
3. General knowledge of nineteenth and twentieth century Russian literature and one of the following: (a) one other Slavic literature, (b) one special period in Russian literature, or (c) some aspect of comparative Slavic literature.

Specific foreign languages accepted or required: For the M.A.—a reading knowledge of French or German; for the Ph.D.—a reading knowledge of French and German.

Significant library or research facilities available to students in this department: Slavic library holdings are now in excess of 80,000 monograph volumes, and 20,000 periodical issues. The majority of the materials are in Russian with particular strengths in language, literature, linguistics, history, and geography. Good working collections in Polish and Serbo-Croatian are now being developed.

SOCIAL WORK

Prof. Richard R. Medhurst, Director, 302 Stillman Hall, 1947 North College Road


Graduate degrees offered: Master of Social Work, Doctor of Philosophy

Admission requirements not stated in general Graduate School section: Students beginning their graduate study in social work may file applications not later than 60 days before the beginning of the Autumn Quarter. Students transferring from other schools of social work should apply at least 60 days before the beginning of the quarter in which they desire admission.

The School of Social Work appraises the fitness of the applicant for a career in social work as judged from letters of reference, experience, personal data, and an interview.

The master's program: Students who are candidates for the Master of Social Work degree normally engage in a six-quarter program of class and field instruction. The student has an option of an individual or group research practicum.

The doctoral program: The doctoral program, designed for social workers with demonstrated professional competence and scholastic ability, is a three-year program. The objective of the program is to prepare students for creative and independent scholarship in the field of social welfare. Students engage in advanced courses in the four core curriculum areas: social welfare, social work practice, social work research, dynamics of social functioning. In addition, an individually designed program of special study in other University departments is completed by the end of the student's second year. There is no foreign language requirement unless it is a part of a student's program of special studies. During the third year the student is engaged in dissertation research and writing.
SOCIOMETRY

Prof. Hans Zetterberg, Chairman, 112 Hagerty Hall, 1775 South College Road


Graduate degrees offered: Master of Arts, Doctor of Philosophy, Certificate in Russian Area Studies

Admission requirements not stated in general Graduate School section: All applicants for admission to graduate study in sociology must have completed not fewer than 20 quarter hours in sociology or the equivalent and have a minimum cumulative grade-point average of 3.0 (A=4.0, B=3.0) for all previous work. Applicants for admission whose grade-point averages are below 3.0 must submit Graduate Record Examination scores for both the aptitude sections and the advanced test in sociology.

Specific subjects or fields of knowledge required in the minimal master's program: Departmental requirements for the M.A. degree in sociology are 45 credit hours including thesis, or 50 credit hours without a thesis; demonstrated competence in three of the following fields: theory, methodology, social organization, social psychology, and a fourth field of the student's choice.

Specific fields of knowledge for which all doctoral students are held responsible: The Department's offerings in sociology are classified into major categories called "general areas" and "specialized fields." General areas include methodological, social organization, social psychology, and theory. Specialized fields include criminology, community and urban sociology, educational sociology, family, industrial sociology, medical sociology, race, rural sociology, sociology of religion, and ecology-demography. The Ph.D. candidate is expected to achieve a comprehensive, integrated knowledge of the broad field of sociology. The Department has no foreign language requirement.

Significant library or research facilities available to students in this department: Graduate students in the Department of Sociology are afforded exceptional opportunities for research training and experience through a comprehensive program of courses and seminars. They have access to extensive data-processing and laboratory facilities and have opportunity to participate in major research programs supervised by senior staff members. These widely varied research programs provide employment for many graduate students as research assistants.

SPEECH

Prof. Keith Brooks, Chairman, 205 Derby Hall, 154 North Oval Drive

Prof. Wallace C. Fotheringham, Director, Graduate Program


Graduate degrees offered: Master of Arts, Doctor of Philosophy

Admission requirements not stated in general Graduate School section: A student with an undergraduate major in speech or a major in a related area (psychology, sociology, anthropology, history, political science, journalism, photography, etc.) with a minimum of 20 credits in speech (broadcasting, rhetoric, public address, interpretation, communication theory, or speech and hearing science) may begin graduate study as a regular student if his minimum overall undergraduate point-hour ratio is at least 2.7 (4.0 basis). A student whose undergraduate program reveals insufficient breadth for effective participation at the graduate level may, by action of the Departmental Graduate Committee, be required to schedule selected undergraduate courses concurrent with graduate course registration and would begin graduate study as a special student. A student whose overall undergraduate point-hour ratio is below 2.7 may be admitted as a special student on the basis of satisfactory performance on the Graduate Record Examination. In this case, additional audit and point-hour requirements may be recommended.

Specific subjects or fields of knowledge required in the minimal master's program: Requirements for the M.A. degree in speech are normally no fewer than 45 credit hours
including a thesis of no more than 5 credit hours. An interdisciplinary program is encouraged and Speech 990 (Areas of Techniques of Research in Speech) is required. For requirements for the Master of Arts in the Teaching of English to Speakers of Other Languages (TESOL), see page 101; requirements for the Certificate Program in TESOL are described on page 35.

The Department has no foreign language requirement.

Specific fields of knowledge for which all doctoral students are held responsible: The Department’s offerings in speech are classified under two major areas: communications, and speech and hearing science. The communications area includes rhetoric and public address, radio and television, interpretation, and communication theory. The interdisciplinary nature of the program requires students to cross lines within the area prior to determining a specialized focus, and to schedule a minimum of 25 to 30 credit hours of communications-oriented courses in other departments of the University. The speech and hearing science area includes speech pathology, audiology, education of the deaf, descriptive and experimental phonetics, phonemics, and phonology. Normally students study a wide range of courses within these specializations and supplement them with work in psychology, social work, or linguistics.

Individual programs of study are developed, depending on background and aspirations, in keeping with the general objectives of the graduate program: (1) to provide advanced and more sophisticated concepts and theories of communication; (2) to provide concentrated attention to research techniques and methodologies appropriate to a variety of communication situations and media; (3) to encourage an interdisciplinary approach to the study of speech which interprets, consolidates, and makes more meaningful the contributions of other areas in the University interested in communications; and (4) to promote the development of scholars and researchers in various areas of communication.

Significant library or research facilities available to students in this department: Speech and Hearing Experimental Laboratories, Communications Research Center, and Ohio State University radio and television facilities.

**SURGERY**

Prof. Robert M. Zollinger, Chairman, N-747 University Hospital, 410 West Tenth Avenue

Prof. Samuel A. Marable, Graduate Committee Chairman


Graduate degree offered: Master of Science

Admission requirements not stated in general Graduate School section: The candidate must have been accepted in the residency training program of the Department of Surgery or hold a fellowship in the Department.

Specific fields of knowledge required in the minimal master’s program: A minimum of 45 hours of graduate credit is required for the degree. Not more than 25 of these may be obtained in the Department of Surgery. Within the Department, emphasis is placed on advanced surgical topics and original laboratory investigation. The remaining 20 hours’ credit may be gained in a variety of ways in other departments of the University. In this way the candidate’s overall program may be constructed to meet his individual needs and desires. An acceptable thesis based on original investigation is required.

Principal fields for specialization and research: general surgery, thoracic surgery, orthopedic surgery, urology, neurological surgery, plastic surgery, pediatric surgery.

Significant library or research facilities available to students in this department: The Health Center Library is available to degree candidates. In addition, the Department maintains a library of current surgical books and periodicals. The facilities of Wiseman Hall are available for animal research. The Department maintains biochemical and other laboratories within the University Hospital. The Clinical Research Unit and other facilities of the College of Medicine can be utilized for approved studies.
THEATRE

Prof. Arthur L. Housman, Chairman, 205 Derby Hall, 154 North Oval Drive
Prof. John C. Morrow, Graduate Committee Chairman
Professor Roy H. Bowen, Arthur L. Housman, George L. Lewis, John H. McDowell; Associate Professors George P. Crepeau, John C. Morrow, Charles C. Ritter; Assistant Professor Donald R. Glancy.

Graduate degrees offered: Master of Arts, Doctor of Philosophy

The Ph.D. program in theatre is intended to serve prospective teachers, critics, and scholars in theatrical and dramatic arts; directors in professional, civic, and educational theatre, and administrators and specialists in civic and regional arts programs. Each candidate for the degree is expected to have a comprehensive theoretical and practical background in several of the areas of theatre: literature, history, criticism, production, and design. Although the candidate may elect to specialize in one or more of these areas, each doctoral program of studies must include the historical, critical, theoretical, and creative aspects of the field. Each doctoral program is specifically designed to meet this objective, although individual courses of study accommodate differences in the background and professional interests of individual students.

Master of Arts students may choose to specialize in one or more areas of theatre or they may elect to enroll in a variety of theatre arts areas. Secondary school teachers and directors of theatre programs frequently elect this second option. M.A. programs are designed by the graduate adviser and the student to accommodate the particular professional interests of the student, but each student must demonstrate abilities in research and scholarship, as well as creative skill in theatrical practice.

Foreign language requirement: Students may satisfy the foreign language requirement of the Ph.D. degree in theatre by demonstrating a thorough reading knowledge of one modern or one classical language such as French, German, Italian, Greek, or Latin, in which there is a substantial body of dramatic literature, criticism, and scholarly material. The student's choice of language must be approved by his adviser and the graduate committee of the Division of Theatre. Should the nature of the student's dissertation research require unique proficiency in the use of a research tool other than a language, the student may, with the approval of his adviser, petition the graduate committee of the Division to substitute advanced coursework and demonstrated proficiency in that field in place of the language requirement.

Principal fields for specialization and research: Theatre history, criticism, and literature; stage design and technical production; performance; acting and directing; theatre education; additionally, joint programs in film, dance, television, and other interdisciplinary studies.

Significant library or research facilities available to students: The Ohio State University Theatre Collection, Experimental Theatre Workshop, International Seminars.

VETERINARY ANATOMY

Prof. Walter G. Venzke, Chairman, 102A Sisson Hall, 1900 Coffey Road
Professors Charles D. Diesem, Walter G. Venzke.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: Graduate work in the Department of Veterinary Anatomy is offered to students with the Doctor of Veterinary Medicine degree or the equivalent from an accredited college of veterinary medicine.

Specific subjects required in the minimal master's program: A minimum of 25 quarter hours must be credited in comparative, developmental, and microscopic anatomy in the master's program. A thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: Specific fields of knowledge beyond the master's degree or equivalent in veterinary anatomy is required. All doctoral students are held responsible for biochemistry, histotechnology, statistics, neurology, and endocrinology. The Department has no foreign language requirement.

Principal fields for specialization and research: The Department offers the following: comparative anatomy, microscopic anatomy, developmental anatomy, and endocrinology.
Significant library or research facilities available to students in this department: On the Ohio State University campus a very close working relationship exists between the Department of Veterinary Anatomy and the College of Medicine Department of Anatomy. The library and research facilities of both areas are available to students.

**VETERINARY MEDICINE**

Prof. Vernon L. Tharp, Chairman, 4 Veterinary Clinic, 2578 Kenny Road

Professors D. F. Donovan, W. R. Krill, V. L. Tharp; Associate Professors D. Gisler, P. W. Murdick; Assistant Professor M. Wyman.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: The applicant must possess a Doctor of Veterinary Medicine degree, or its equivalent, and permission of the Departmental graduate committee. Candidates may expect to spend a minimum of four quarters to complete the Master of Science degree.

Specific field of knowledge required in the minimal master’s program: The student must demonstrate proficiency in the clinical sciences in his field of specialization, as well as in selected coursework related to this field. Satisfactory completion of a thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: The student must have a thorough knowledge of a clinical specialty and have satisfactorily completed coursework and original research in a discipline related to this specialty.

Specific foreign languages accepted or required: None.

Principal fields for specialization and research: Veterinary medicine, ophthalmology, obstetrics and reproduction, and laboratory animal medicine are offered by the Department.

Significant library or research facilities available to students in this department: Sisson Hall Library, Laboratories, Main Library, Departmental and clinical files, and Veterinary Clinical facilities are available to the students.

**VETERINARY PARASITOLOGY**

Prof. Fleetwood Koutz, Chairman, 304 Sisson Hall, 1925 Coffey Road

Professors Harold F. Groves, Fleetwood R. Koutz.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in general Graduate School section: The graduate student must have a Doctor of Veterinary Medicine degree.

Specific fields of knowledge for which all Master of Science and doctoral students are held responsible: The student should have a thorough knowledge of the specific field of parasitology that he chooses for his study. He should have a thorough working knowledge of other related fields of veterinary parasitology, along with a wide knowledge of general parasitology in other than domestic animals. The Department has no foreign language requirement.

Principal fields for specialization and research: The following are offered by the Department: veterinary helminthology, with specific studies on nematodes, cestodes, or trematodes; veterinary protozoology, with specialization in any of the classes of parasitic forms; and veterinary entomology, with specialization in insecta or acarina.

Significant library or research facilities available to students in this department: The veterinary library contains a very excellent collection of books, pamphlets, reprints, journals, and research material on all phases of veterinary parasitology.

**VETERINARY PATHOLOGY**

Prof. Richard A. Griesemer, Chairman, Veterinary Pathology Building, 1925 Coffey Road

Regents Professor Clarence R. Cole; Professors Richard A. Griesemer, Robert L. Farrell, Adalbert Koestner, Gaylord McKissick; Associate Professors Charles C. Capen, Walter F. Loeb, Glyde A. Marsh, Leopold Liss; Visiting Associate Professor Wolfgang Wechsler; Assistant Professor Edward Fowler.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: Graduate work in the Department of Veterinary Pathology is offered to students with the Doctor of Veterinary Medicine degree or
the equivalent from an accredited college of veterinary medicine.

Specific subjects or fields of knowledge required in the minimal master's program:
The following represent the minimal number of specific subjects required for the Master of Science degree in veterinary pathology; pathology technic, histopathology, advanced clinical pathology, chemical pathology, surgical pathology, scientific photography, college teaching, biopsy diagnosis, necropsy, and histochemistry. A satisfactory thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: All the following specific fields of knowledge: animal oncology, viral diseases, biostatistics, mycotic diseases, parasitic diseases, histochemistry and histopathology, neuroanatomy, neuropathology, diseases of laboratory animals, chemical pathology, radiation pathology, toxicologic pathology, nutritional and metabolic diseases, cardiovascular diseases, diseases of the endocrine system, ophthalmic pathology, dermatopathology, diseases of the urogenital system, musculoskeletal diseases, electronmicroscopy, respiratory diseases, hemic and lymphatic diseases, diseases of the digestive system, cytopathology, comparative pathology, and audiovisual education.

There is no foreign language requirement for the Ph.D. degree.

Principal fields for specialization and research: Students may elect one of the following principal fields for specialization and research: oncology, infectious diseases, neuropathology, ophthalmic pathology, histochemistry, electronmicroscopy, toxicologic pathology, parasitic disease, radiation pathology, diseases of the endocrine system, diseases of laboratory animals, dermatopathology, cardiovascular disease, primate pathology, nutritional and metabolic diseases, diseases of the urogenital system, respiratory disease, hemic and lymphatic diseases, clinical pathology, and cytopathology.

Significant library or research facilities available to students in this department: The Department has maximal security laboratories and animal isolation for research on highly infectious, toxic, or radioactive materials; a well-established germ-free life laboratory permits all students to utilize germ-free animals. A complete and active electronmicroscopy suite is available for research in cytopathology. A completely equipped laboratory serves all students engaged in chemical pathology and histochemistry. Constant temperature rooms permit extensive tissue culture work.

VETERINARY PHYSIOLOGY AND PHARMACOLOGY

Prof. Charles R. Smith, Chairman, 351 Sisson Hall, 1900 Coffey Road
Prof. Thomas E. Powers, Graduate Committee Chairman

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirements not stated in the general Graduate School section: An applicant must possess a Doctor of Veterinary Medicine degree or must have obtained written permission from the Departmental graduate committee. Preprofessional education must include sufficient preparation in organic chemistry, quantitative analysis, and mathematics. Candidates may expect to spend a minimum of four quarters in completing the Master of Science degree.

Specific fields of knowledge required in the minimal master's program: The program must include statistics and a basic course in mammalian physiology. A thesis is required.

Specific fields of knowledge for which all doctoral students are held responsible: All students are required to have a basic knowledge of mathematics, biophysics and/or biochemistry. Candidates may anticipate that a minimum of four years will be required to complete the Doctor of Philosophy degree. The Department has no foreign language requirement.

Principal fields for specialization and research: The Department, in cooperation with allied departments in the University, provides instruction and research guidance in comparative mammalian cardiovascular, neurologic, and renal physiology. Pharmacology research programs are limited to comparative pharmacodynamics and toxicology.

Significant library or research facilities available to students in this department:
Excellent library facilities existing in Sisson Hall include resources for both applied and fundamental studies of pharmacology and physiology in veterinary science.

VETERINARY PREVENTIVE MEDICINE

Prof. John H. Helwig, Chairman, 252 Sisson Hall, 1900 Coffey Road
Professors Edward H. Bohl, John H. Helwig, David O. Jones; Associate Professor Julius P. Kreier.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirement not stated in the general Graduate School section: In addition to the general requirements of the College of Veterinary Medicine in the Graduate School, the student must be acceptable to the Department's graduate committee and chairman.

Principal fields for specialization and research: Opportunities are available for the student to select his major problem in such specific areas of veterinary preventive medicine as meat hygiene, food hygiene, animal disease prevention, public health, and epidemiology. When problems of veterinary preventive medicine are essentially bacteriological, virological, or immunological, the graduate program is developed in cooperation with the Faculty of Microbial and Cellular Biology. These opportunities are enhanced by training provided through the cooperation of federal, state, and local preventive medical agencies affiliated with the Department.

The Department has no foreign language requirement.

VETERINARY SURGERY AND RADIOLOGY

Prof. Richard L. Rudy, Chairman, 1195 Veterinary Clinic, 2578 Kenny Road
Professors Leroy E. Johnson, Richard L. Rudy; Visiting Professor William J. Roenigk; Associate Professors Albert A. Gabel, George P. Wilson III; Assistant Professor James K. Burt.

Graduate degrees offered: Master of Science, Doctor of Philosophy

Admission requirement not stated in the general Graduate School section: The applicant must be approved by the Department chairman or graduate committee.

Specific fields of knowledge required in the minimal master's program: The master's program requires proficiency in biological and physical sciences necessary for understanding of the principles of surgery or radiology and to enhance specialization necessary for completion of the thesis. All programs require the completion of the thesis.

Principal fields for specialization and research: One of the several specialties in surgery, including orthopedic, thoracic, and the surgical treatment of neoplasms; anesthesiology; and diagnostic and therapeutic radiology, including radioactive isotope and chemotherapeutic cancer therapy.

Significant library and research facilities available to students in this department: The Veterinary Hospital and College Library contribute the primary research facilities for the students. Facilities of allied departments in the College of Medicine are also utilized for cooperative graduate student projects.

WELDING ENGINEERING

Prof. Roy B. McCauley, Chairman, 123 Welding Engineering Laboratories, 190 West 19th Avenue
Prof. Edward R. Funk, Graduate Committee Chairman
Regents Professor Robert C. McMaster; Professors Robert S. Green, Roy B. McCauley; Associate Professors Clarence E. Jackson, Edward R. Funk; Assistant Professor William L. Green.

Graduate degree offered: Master of Science

Principal fields for specialization and research: Graduate study in the Department of Welding Engineering is directed toward improving the student's understanding of the fundamental concepts and engineering principles applicable to the welding field. The Master of Science degree program is intended to provide the background required for a career in research, development, or education. Programs are developed for each graduate student on an individual basis; however, it should be anticipated that the general areas of design, processes, materials, and quality control will be included.

Significant library and research facilities available to students in this department: Graduate research is available in the following Departmental laboratories: weld-
ing processes, welding metallurgy, non-destructive testing, electron beam, sonic power, and welding of refractory and reactive metals, and slags and fluxes. The Davis Welding Library, available in the same building, has an exceptionally fine collection of welding literature.

ZOOGY AND ENTOMOLOGY

Prof. Frank W. Fisk, Graduate Committee Chairman, 281 Botany and Zoology Building, 1735 Neil Avenue


Graduate degrees offered: Master of Science, Master of Arts, Doctor of Philosophy

At present this graduate program serves zoologically oriented graduate students in four Academic Faculties of the College of Biological Sciences; namely, Population and Environmental Biology, Entomology, Genetics, and Organismic and Developmental Biology. Although this program offers specialized instruction and research in a wide variety of disciplines, it also ensures, by virtue of its assisting requirements, that each graduate will have had college teaching experience and a fundamental understanding of the principles of biology.

Admission requirements not stated in the general Graduate School section: In addition to fundamental training in the biological sciences, the student should have adequate training in the physical sciences and mathematics. These should include a minimum of 40 quarter hours of biology, 10 quarter hours each of physics and mathematics, and at least 18 quarter hours of chemistry, the latter to include a course in organic chemistry, biochemistry, or physical chemistry. Students with inadequate preparation may be admitted with conditions and are expected to follow a program designed to supplement and correct such deficiencies before acceptance into an advanced degree program.

Requirements for advanced degrees: Any conditions under which the student may have been admitted must be met satisfactorily before he will be approved for admission to candidacy for an advanced degree. Each graduate student must register for two hours of Zoology 880 during his first Autumn Quarter. As part of his formal training, each degree candidate is expected to have assisted in Biology 100, Zoology 101, and a course in his specialty. Each student's program pertaining to the course of study and the thesis or dissertation research is determined in consultation with the major professor, or co-advisers, with the approval of the Graduate Committee, within the framework of the requirements of the Graduate School and depends, to a large extent, on the student's field of specialization. A non-thesis master's degree program is not offered. At the time of the General Examination for admission to candidacy for the doctoral degree, the student should appreciate the fundamentals as presented in the basic courses. Since each student is required to serve as a laboratory instructor in certain of these courses, a knowledge of biology sufficient for satisfactory performance as a laboratory instructor is required in addition to his mastery of the subject matter in his field of specialization.

Foreign language requirement: The minimum foreign language requirement, as established by the Graduate Faculty, is a knowledge of any one language other than English or the student's native language. This requirement will have been met (a) if, as an undergraduate, the student completed with a passing grade the fourth term (or its equivalent) in a given language, or (b) when, as a graduate, the student completed with a grade not lower than C the third course in a language sequence 571, 572, 573, or its equivalent.

Principal fields for specialization and research: These include (1) cellular and molecular biology, facilitated by electron microscopy and radiation sources; (2) ecology, essentially at the field level; (3) entomology, notably economic and medical, physiology, toxicology, morphology, and systematics.
(4) acarology, supported by an extensive collection and reference library; (5) ethology, complemented by a bio-acoustical laboratory; (6) genetics, primarily population, behavior, and physiology; (7) parasitology; (8) systematics, with extensive collections; (9) vertebrate zoology; and (10) wildlife and fishery biology, including conservation.

Significant library or research facilities available to students in this department: The library, containing over 50,000 catalogued volumes, supplements the Main Library and other departmental libraries to which students have ready access. Standard and special research facilities and equipment are available in each of the ten fields listed previously. Additional library and research facilities exist at the Agricultural Research and Development Center (Wooster) and the Franz Theodore Stone Laboratory (Put-In-Bay).

SPECIAL INTERDISCIPLINARY GRADUATE PROGRAMS

ANCIENT HISTORY AND LITERATURE
A program leading to the Master of Arts degree may be arranged in the combined fields of ancient history and the classical languages. Such a program must be approved by the Department of History, the Department of Classics, and the Dean of the Graduate School.

ATMOSPHERIC SCIENCES
The graduate student interested in specializing in the atmospheric sciences, may elect to identify with the program of the Center for Geophysical Dynamics, which serves to provide a focus for and coordination of graduate study and basic research concerned with the dynamics of the earth, its oceans, and its atmosphere.

Graduate students in cognate departments, including those of Aeronautical and Astronautical Engineering, Chemistry, Computer and Information Science, Electrical Engineering, Mechanical Engineering, Geography, Geology, Physics, and other departments in the College of Mathematical and Physical Sciences and the College of Engineering, may participate in studies of the atmosphere through courses, seminars, special lectures, and research with the faculty of the Center for Geophysical Dynamics. Students associated with activities of the Center will be enrolled in one of the cognate departments and must meet the entrance and degree requirements of that department. A sound training in applied mathematics, physics, geophysical sciences and/or fluid mechanics is considered desirable background for advanced studies in atmospheric sciences.

BIOMEDICAL ENGINEERING
Interdisciplinary graduate study in biomedical engineering is provided by several departments of the College of Engineering that offer the Master of Science degree and the Doctor of Philosophy degree. The purpose is to provide the opportunity for capable engineering graduates to broaden their capabilities to include the engineering aspects of such areas as physiology, medicine, biophysics, dentistry, pharmacology, veterinary medicine and surgery, optometry, speech, hearing, and psychology. The intent is that the engineer will prepare himself to carry on his engineering as it is related to these life-science areas rather than become an authority in one of these fields. It is expected, however, that he will be sufficiently educated in the life-science areas that will be able to participate actively in the research and development in that area.

The thesis or dissertation is either a topic from biomedical engineering and advised by an engineering staff member or a problem of mutual interest to both engineering and life-science and jointly advised by a staff member from both areas. In all cases, the research must have engineering significance, as well as be a contribution to the life-science area.

Engineering courses are also available for students in life-science and medicine.

Information about biomedical engineering work may be obtained from Prof. H. R. Weed, Chairman of the Biomedical Committee, at 119 Caldwell Laboratory, or from the chairmen of the participating departments.

CONSERVATION
Office: 241 Lord Hall, 124 West 17th Avenue

Graduate instruction concerned with conservation is offered for master's or doctoral degrees in several areas including architecture (city and regional planning), agricultural economics and rural sociology, agricultural engineering, agronomy, civil engineering, economics, education, geog-
raphy, geology, and zoology. Graduate students are encouraged, because of the interdisciplinary nature of this subject, to formulate interdepartmental programs of study and research. Coordination of the University teaching and research program in this area is effected through the School of Natural Resources. Students interested in developing interdepartmental programs in this area should consult with the Director of the School at the above address.

The School maintains an extensive collection of contemporary reports concerning natural resources, particularly of material normally not available through libraries.

MEDIEVAL AND RENAISSANCE STUDIES

The Center of Medieval and Renaissance Studies participates in the University Fellowship program. (See page 104.) Individuals interested in medieval and Renaissance studies (including Arabic and Hebrew), who have distinguished records in their baccalaureate programs, are expressly invited to apply. Since a graduate degree is not offered by the Center, the application for admission must note both the department of major interest and "Medieval and/or Renaissance Studies" as the area of specialization.

The Center has ten Research Assistantships, assigned annually. An assistant may work either with a senior Scholar of the Center on projects which will increase his learning capacity, or for the Center, in which he will learn something about the professional work of medievalist and renaissance specialists. Those wishing special information with regard to the Center's work may write Prof. Francis Lee Utley, Acting Director, Center of Medieval and Renaissance Studies, Main Library, 1858 Neil Avenue, Columbus, Ohio 43210.

MERSHON CENTER FOR EDUCATION IN NATIONAL SECURITY

Prof. James A. Robinson, Director, 199 West Tenth Avenue

Mershon Professor of Genetics J. Bruce Griffing; Mershon Professor of Political Science James A. Robinson; Mershon Associate Professor of Psychology Anthony G. Greenwald.

The Mershon Center for Education in National Security offers three graduate seminars for students from various disciplines who are interested in the analysis of national security programs: an introduction to the field of national security; an intermediate course in policy analysis; an advanced course in national security problems; and supervised research in particular aspects of national security. Advanced degrees are awarded by individual departments. A special collection of documents and recent writings on national security is maintained in the Mershon National Security Library.

NUTRITION

Graduate work in nutrition is offered in several departments, including those of Biochemistry, Animal Science, Dairy Science, Home Economics, Poultry Science. In addition, the University offers the facilities of the research laboratories of the Institute of Nutrition under the directorship of Dr. John B. Alfred, 1314 Kinnear Road. Qualified faculty who are members of the Institute direct the research of graduate students working on nutrition problems in the above mentioned field of study.

POLAR STUDIES

Prof. Colin Bull, 103 Mendenhall Lab., 125 South Oval Drive

Because Arctic, Antarctic, and alpine regions present environments which are different from other parts of the globe, Ohio State has developed scientific studies of these areas in an interdisciplinary way.

Master of Science and Doctor of Philosophy programs with training in polar studies are available within the following fields of study: agronomy, anthropology, botany, city and regional planning, civil engineering, geodetic science, geography, geology, physics, and zoology and entomology. Normally each student's program will follow the requirements of the department of principal study. To this may be added necessary background courses in other fields. Included in the requirements will be several courses which have specific polar content.

To aid related research for a thesis or dissertation, the several departments and the Institute of Polar Studies have available X-ray equipment, mass spectographs, polarizing microscopes, dust-free particle analysis laboratory, low-temperature laboratories, seismic equipment, gravity equipment, Wild A-7 and other stereoplotters, special polar library and maps, and calculators in addition to the facilities of the Computer Center.
TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES

Prof. George M. Landon, 205C Brown Hall, 190 West 17th Avenue

The Departments of English, Linguistics, and Speech offer courses leading to Plan B Master of Arts degree with specialization in teaching English to speakers of other languages.

The curriculum in TESOL is a four-quarter sequence which may be started in the Autumn Quarter. The required coursework includes principles of linguistics, phonetics, language teaching methodology, contrastive analysis, and the structure and history of the English language. Opportunity is provided for supervised practice teaching of English to foreign students on the University campus as a regular part of the program. A comprehensive examination must be passed in the final quarter of the program.

Financing Graduate Education

Financial aids to graduate students at The Ohio State University may conveniently be divided into three general types. The first includes all fellowships, national and local, administered through the Graduate School; the second consists of endowed fellowships assigned to single departments or groups of departments; the final category is that of research and teaching assistantships, also administered by individual departments.

Each student who applies for admission to the Graduate School may also apply simultaneously for an Assistantship and/or a Fellowship and Traineeship. The single set of application materials, which may be obtained from the Admissions Office, will be coordinated by the Admissions Office with the appropriate graduate department and the Office of the Graduate School. (See page 15.) Each applicant should forward all application materials, except recommendation forms, directly to the Admissions Office. Two complete sets of official transcripts should be forwarded to the Admissions Office from each college or university previously attended.

Each application must be completed, and all supporting documents must be on file in order for the applicant to receive full consideration. Some departments may request supplementary information directly from their applicants.

The deadline for Fellowship applications is February 1, unless otherwise noted. (See complete time schedule for Fellowship and Traineeship applicants.) Most departments require that completed applications for teaching or research assistantships be filed prior to April 1.

POLICIES GOVERNING GRADUATE FELLOWSHIPS

1. An applicant should generally have a point-hour ratio of at least 3.25 of a possible 4.0 in both undergraduate and graduate work unless supplementary evidence is presented which indicates that he ranked in the upper 25 percent of his class or is otherwise particularly well qualified.

2. Applicants must be under 35 years of age unless the department in which the applicant proposes to work indicates cause for waiving this rule.

3. Fellows are expected to pursue a full-time schedule of courses or research or both. They must carry 45 quarter hours of graduate work in three quarters, 60 hours in four quarters, or an appropriate portion of the 45 hours if the appointment is for less than three quarters. They must maintain the scholastic standards established for graduate students in good standing. They must not be otherwise gainfully employed during the tenure of the fellowship. A student must not hold more than one fellowship during any given period of time.

4. Fellowships are awarded for the academic year only (unless otherwise noted).

FOREIGN STUDENTS

Foreign-student fellowship applications from non-English-speaking countries will not be accepted unless the applicant has been granted a Fulbright or similar award...
through the Institute of International Education or has completed the equivalent of one full quarter of graduate coursework, with a minimum 3.25 point-hour ratio, in this country.

TIME SCHEDULE
Deadline for completed applications: February 1 (unless otherwise noted). This is the final date, but it is advisable for the applicant to file fellowship material one month in advance.

Notification of awards: March 21. As a member of the Association of Graduate Schools this university has pledged itself to extend no offers of fellowship or traineeship support before March 21.

Acceptance or refusal: April 15. A student is not bound by any agreement made before April 15. A student who wishes to resign from a fellowship, traineeship, or assistantship after April 15 must secure a release from one institution before accepting an offer from another.

ASSISTANTSHIPS
Several hundred graduate student assistantships are available each year. Assistants carry loads of graduate coursework which vary between 7 and 15 credit hours a quarter, depending on the time available and the judgment of the graduate adviser.

Teaching assistantships require of the student a specified amount of time for laboratory assistance, teaching, and other activities related to his major subject. The remainder of his time is given to graduate work. Teaching assistants receive compensation ranging from $1,800 to $4,800 payable in nine monthly installments during the quarters in which they are on duty.

Many departments (particularly in science, engineering, and agriculture) also offer research assistantships with various compensations. Research assistants are assigned to research projects under the supervision of graduate professors, and it is generally possible for these students to carry out thesis and dissertation research on such projects.

STUDENT PERSONNEL ASSISTANTS
Thirty-five to forty student personnel work-study assistantships are available each year in the areas of student housing, union activities, counseling, financial aids, and international student relations. Preference is given to applicants working toward the Master of Arts or Doctor of Philosophy degree in counseling or higher education. Holders of these assistantships work approximately 20 hours a week, and compensation ranging from $1,900 to $2,700 is earned from the middle of September to the close of the Spring Quarter. Tuition, instructional and general fees, and student services fees are waived for students holding these assistantships. Further information may be obtained from the Director of the Student Personnel Assistant Program, 218 Pomerene Hall, 1760 Neil Avenue.

FEES
Tuition, instructional and general fees, and student services fees for teaching and research assistants and for most fellows and trainees will be waived. For fellowships and traineeships see specific listing of the award. A $25 acceptance fee is to be paid by all students enrolling for the first time in the Graduate School. In addition, fellows, trainees, and assistants are required to pay laboratory and course fees unless they are waived under special fellowship or traineeship allowances.

OTHER FINANCIAL ASSISTANCE
Administration of student employment, Work-Study Program, and loans is centered in the Student Financial Aids Office, 200 Student Services Building, 154 West 12th Avenue. The office is open from 8 a.m. to 5 p.m. weekdays and 8 a.m. to 12 noon on Saturdays. The following services are available to assist students in need of financial aid.

STUDENT EMPLOYMENT
The Student Employment Office, 201 Student Services Building, serves only registered students and their spouses. The office solicits and receives information on job opportunities on and off campus. Students submit applications and are interviewed regarding their qualifications and availability. Qualified applicants are referred to appropriate employers for consideration.

The Ohio State University is located in a rapidly expanding metropolitan area where wives of graduate students may ex-
pect to find employment in most lines of endeavor. Clerical and secretarial positions are fairly easy to find at the University, in governmental agencies, in private industry, and in professional offices.

Elementary and secondary school teachers are needed in the city of Columbus and for the suburban school systems of Franklin County. For more definite information, write to the Chairman, Educational Personnel Placement Office, 176 Arps Hall, 1945 North High Street, Columbus, Ohio 43210.

**WORK-STUDY PROGRAM**

The College Work-Study Program, under the Economic Opportunity Act of 1964, provides financial aid through employment to college students who, without such assistance, would not be able to attain a higher education. To qualify, a student must:

1. Come from a low-income or moderate-income family unable to contribute significantly to their education.
2. Need this employment income in order to attend college.
3. Be able to work up to 15 hours per week.
4. Carry a minimum academic load of 9 credit hours and maintain a satisfactory scholastic standing.
5. Be registered or admissible as a full-time student.

Students may work not more than 15 hours a week when classes are in session; when school is not in session or during vacation periods, students may work a 40-hour week. Students working full time all summer can earn between $700 and $1,000. At 15 hours per week during the academic year, they can expect to earn $75 to $100 a month.

Detailed information and applications are available in Room 212, Student Services Building.

**LOANS**

The Student Financial Aid Office administers all students loans at The Ohio State University. All loans are for current educational expenses only (room, board, books, and tuition). A loan may be made to a student only if sufficient funds cannot be provided by his parents, guardian, or spouse. A number of different loan funds are available.

Students in good standing who are enrolled for a full time course of study are eligible to apply.

**UNIVERSITY LOAN FUND**

University and foundation loans are applied for quarterly and have a usual maximum of $400 per loan, $1,000 per year, and $2,000 total while in the University. Interest rates average 3 percent, and repayment schedules vary according to the year in college and financial needs of the student. Co-signers are required and parent or guardian must co-sign in the case of minors.

**NATIONAL DEFENSE LOAN FUND**

National Defense Student Loans are available to students who are capable of maintaining good standing and have a verified financial need. Preference will be given to students with superior preparation or ability. Students with the best records and highest financial need will be given first consideration. According to past experience, students with below-average academic records probably cannot be helped.

A student may borrow under the National Defense Loan Program an amount determined by his demonstrated financial need. If need justifies it, a graduate or professional student may borrow a maximum of $2,500 a year to a total not to exceed $10,000. No interest is charged while the student is in full-time attendance at the University or for nine months thereafter. Repayments of principal and interest begin nine months after the student leaves the University and must be completed within a maximum of ten years. Quarterly repayments are required with a maximum repayment of $45 per quarter. The rate of interest is 3 percent per annum on the unpaid balance. The debt is canceled in the event of death or permanent and total disability.

**APPLICATION PROCEDURE**

Loan applications for the quarters indicated are available and must be submitted during the following periods.

- **Autumn Quarter** ...............July 15-August 15*
- **Winter Quarter** .............October 15-November 15*
- **Spring Quarter** .............January 15-February 15*
- **Summer Quarter** ...........April 15-May 15*

* Application periods for National Defense loans for the academic year.
EMERGENCY LOANS
Emergency Loans with a $50 maximum, 90-day repayment period, and no interest are also available. These emergency funds may be secured at any time during the year when there are sufficient funds.

BANK LOANS
The Higher Education Act of 1965 established a federal program of low-cost, guaranteed loans. These loans, for a maximum of $1,500 a year for graduate or professional students, are available through local banking institutions.

Repayment of not less than $360 a year is required and may not extend over a 15-year period after execution of the loan. Many students will be eligible for federal payment of a portion of their interest depending upon their families' incomes. Further details concerning this program in each state and a list of participating Ohio lending institutions can be secured from the Student Financial Aids Office.

GRADUATE STUDENT HOUSING
Single students may arrange for suitable housing both in private homes and in the newly expanded system of residence halls. In addition to the many furnished and unfurnished apartments in the University district, the University has recently constructed more than 400 units for married couples in Buckeye Village.

All students applying for admission to the University should indicate the type of housing desired on the application forms. It is not necessary to send a separate request for initial housing information. Additional housing information may be obtained by addressing an inquiry to the Office of Student Housing, 309 Pomerene Hall, 1760 Neil Avenue, Columbus, Ohio 43210.

Fellowships

GENERAL

University Fellowships
Eligible fields: Open for study in all Ph.D. programs.

Period of award: Four years, continued support beyond the first year being contingent upon satisfactory progress of the awardee.

Method of support: First year – Fellowship, stipend $2,000 for academic year; $2,400 including summer study.

Second year – Teaching or Research Assistantship, minimum stipend for academic year $2,400.

Third year – Teaching or Research Assistantship minimum stipend for academic year $2,400.

Fourth year – Dissertation Fellowship, stipend $3,600 for 12 months.

Summer support will also be available for awardees during the second and third years if their assistantship appointments are made on an academic year basis; stipend $400.

Other allowances: Tuition, instructional and general fees, student services fees, acceptance fee, and normal laboratory and course fees.

Method of review: By the Graduate School Fellowship Committee.

Approximate number of awards: 200.

Address inquiries to: Dean of the Graduate School.

Mershon National Graduate Fellowships
Eligible fields: Candidates in the social sciences who are planning academic or governmental careers in the field of national security.

Period of award: Three quarters. Renewable for second and third year of study when fellows maintain high academic standing and continue research in national security. In addition, summer support is available.

Stipend: $2,000, first year; $2,200, second year; $2,400, third year, plus $400 for summer study.
Other allowances: $400 allowance a year for each legal dependent, plus $100 for each dependent when awardee is receiving summer support, plus remission of tuition, instructional and general fees, student services fees, and laboratory or course fees.

Conditions: Must include courses in national security in graduate program.

Method of review: By the Mershon Center for Education.

Approximate number of awards: 18.

Address inquiries to: Dean of the Graduate School.

Mary H. Osburn Memorial Fund Fellowships

Eligible fields: Music and zoology.

Qualification: Must be currently enrolled in eligible department.

Stipend: $600.

Method of review: By the Mary H. Osburn Memorial Fund Fellowship Committee.

Address inquiries to: Chairman of the appropriate department.

National Defense Education Act Fellowships (Title IV)

Eligible fields: (1970-71): Accounting, anthropology; astronomy; botany; business organization; chemistry; classics; economics; education; electrical engineering; English; geodetic science; geography; geology; German; history; linguistics; mathematics; mechanical engineering; metallurgical engineering; music education and music history; pharmacy; philosophy; physical education; physics; political science; psychology; Romance languages; Slavic languages and literatures; sociology; speech; theatre.

Qualification: Must be a citizen or a permanent resident of the United States.

Period of award: Three academic years, plus an option of summer study for three summers.

Stipend: $2,000, first year; $2,200, second year; $2,400, third year; plus $400 for summer study.

Other allowances: $400 allowance a year for each eligible dependent, plus $100 for each dependent when on tenure for summer quarter, plus remission of all academic fees.

Conditions: Must be interested in pursuing a Ph.D. program and in a career in college or university teaching in the United States.

Address inquiries to: Dean of the Graduate School.

National Defense Education Act Fellowships—Modern Foreign Language (Title VI)

Eligible fields: Preference given to candidates in Slavic languages and literatures and in the fields covered in the program of Russian Area Studies and related subjects.

Qualification: Must be a citizen or a permanent resident of the United States.

Period of award: Three quarters and (if desired) the 1970 Summer Quarter. Renewable.

Stipend: $450 for study during the summer, $2,250 for study during the academic year, or $2,700 for both summer and academic year.

Other allowances: Dependency allowance for each eligible dependent (maximum of four dependents) of $120 for the summer, $600 for the academic year, or $720 for both summer and academic year; plus travel allowance to fellowship institution if traveling more than 50 miles to undertake fellowship study; plus remission of all academic fees.

Method of review: By the Title VI Fellowship Committee.

Address inquiries to: Dean of the Graduate School.

Woodrow Wilson National Foundation Fellowships

Eligible fields: Arts and sciences.

Qualification: Must be a citizen of the United States.

Period of award: Three quarters.

Special conditions: Awarded for the first year of graduate study only. Candidate must be interested in college teaching as a career.

Type of application: Nominations must be made by a faculty member; no direct applications accepted.

Deadline date: Nominations must be made by October 31 to the chairman of the region in which the nominee’s institution is located.
SOCIAL SCIENCES
Alberta Garber Scott Fellowship in Sociology
Eligible fields: Political science, sociology, and social work.
Qualification: Applicants must be graduating seniors at The Ohio State University.
Period of award: Three quarters.
Stipend: $600.
Method of review: By the Alberta Garber Scott Fellowship Committee.
Address inquiries to: Dean of the Graduate School.

Battelle-Columbus Laboratories Fellowships
See page 106.

International Business Machines Corporation Fellowship
See page 106.

Mershon National Graduate Fellowships
See page 104.

National Defense Education Act Fellowships—Title IV
See page 105.

National Defense Education Act Fellowships—Modern Foreign Language—Title VI
See page 105.

National Institutes of Health Fellowships
See page 107.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

William Green Memorial Fellowships
Eligible fields: Labor and industrial relations.
Period of award: Three quarters.
Stipend: $2,000.
Other Allowances: Tuition, instructional and general fees, and student services fees.
Method of review: By the William Green Fellowship Committee.
Address inquiries to: Chairman, William Green Fellowship Committee, Department of Economics.

SCIENCE AND ENGINEERING
Atomic Energy Commission Fellowships in Nuclear Science and Engineering
Eligible fields: Nuclear science and engineering (with interdisciplinary studies in allied areas of nuclear science and engineering, chemical engineering, chemistry, mechanical engineering, metallurgical engineering, and physics).
Qualification: Must be a citizen of the United States.
Period of award: One calendar year; renewable for a total of three years.
Stipend: $2,400, $2,600, $2,800 depending on level of graduate study.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees, plus $500 for each eligible dependent (maximum, three dependents).
Deadline date: January 5.
Address inquiries to: Nuclear Science and Engineering Fellowship Office, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tennessee 37830.

Battelle-Columbus Laboratories Fellowships
Eligible fields: Engineering, mathematics and the physical, biological, business, and social sciences.
Qualifications: Must be a citizen of the United States, a doctoral candidate with a master’s degree or equivalent credit, and interested in a research career.
Period of award: Four quarters. Renewable considered by application.
Stipend: $3,000 if single or married without children; $3,600 if married with one child; $4,200 if married with more than one child.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By a fellowship committee of the Columbus Laboratories of Battelle Memorial Institute.
Address inquiries to: Dean of the Graduate School.

International Business Machines Corporation Fellowship
Eligible fields: Chemistry, computer science, electrical engineering, materials science, mathematics, and physics.
Qualifications: Must be a citizen of the United States and a Ph.D. candidate.
Period of award: Four quarters. Renewable for maximum of three years.
Stipend: $3,000 with an additional $600 allowed for each dependent up to a maximum stipend of $4,800.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.

Method of review: By the Graduate School Fellowship Committee.

Address inquiries to: Dean of the Graduate School.

Muellhaupt Fellowships
Eligible fields: Botany, microbiology, physiology, and zoology.
Period of award: Three quarters.
Stipend: $3,000.
Method of review: By the Graduate School Fellowship Committee.
Approximate number of awards: Two or three.
Address inquiries to: Dean of the Graduate School.

National Institutes of Health Predoctoral Fellowships
Eligible fields: Anatomy, anthropology, behavioral sciences, biochemistry, biomedical engineering, biophysical sciences, biostatistics, botany, dental health, endocrinology, entomology, environmental sciences, genetics, health information specialties, health-related organic chemistry, history of life sciences, medicinal chemistry, microbiology, nutrition, parasitology, pathology, pharmacology, physiology, psychology, sociology, toxicology, and zoology.
Fellowships are not awarded for training leading to the M.D., D.D.S., or D.V.M. degree.
Qualification: Must be a citizen of the United States or must have filed a Declaration of Intent.
Period of award: One year with possibility of renewal.
Stipend: $2,400 to $2,800, depending on level of graduate study.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees; plus $500 for each eligible dependent.
Type of application: Must complete a special NIH application.
Schedule for receipt of applications and announcements:
January 1
April 1
October 1

Applications arriving too late for one review are automatically considered at the following review.
Address inquiries to: Career Development Review Branch, Division of Research Grants, National Institutes of Health, Bethesda, Maryland 20014.

National Science Foundation Graduate Fellowships
Eligible fields: Sciences and engineering.
Qualification: Must be a citizen of the United States.
Stipend: $2,400 to $2,800 a calendar year depending on level of graduate study.
Other allowances: $500 allowance a calendar year for each eligible dependent, plus remission of all academic fees. Up to $1,000 a calendar year for special teaching assignments (awarded only in unusual situations). Travel allowance to fellowship institution.
Type of application: Must complete a special NSF application. Must take the Graduate Record Examination.
Deadline date: December 5, for completed applications.

National Science Foundation Summer Traineeships For Graduate Teaching Assistants
Eligible fields: Sciences and engineering.
Qualifications: Must be a citizen of the United States. Must have had not less than one academic year of experience as a graduate teaching assistant prior to beginning tenure.
Period of award: Summer Quarter.
Stipend: $85 a week.
Other allowances: Remission of all academic fees.
Type of application: Must complete a special application.
Method of review: By the Graduate School Fellowship Committee.
Deadline date: To be announced.
Address inquiries to: Dean of the Graduate School.
National Science Foundation Graduate Traineeships

Eligible fields: Biological sciences; engineering sciences; mathematical sciences; physical sciences; psychology (excluding clinical); and social sciences.

Qualification: Must be a citizen of the United States.

Period of award: Four quarters.

Stipend: $2,400 to $2,800, depending on level of graduate study.

Other allowances: $500 for each eligible dependent and the remission of all academic fees.

Method of review: By special Graduate School committee.

Address inquiries to: Dean of the Graduate School.

Stillman W. Robinson Fellowship

Eligible fields: Mechanical, civil, and electrical engineering.

Period of award: Three quarters.

Stipend: $2,000. Awarded every other year. To be awarded in 1970-71.

Method of review: By the Graduate School Fellowship Committee.

Address inquiries to: Dean of the Graduate School.

Fellowships Restricted to Specific Fields of Study

ACCOUNTING

Haskins and Sells Fellowship

Eligible field: Accounting.

Period of award: Three quarters.

Stipend: $2,500.

Method of review: By faculty committee.

Address inquiries to: Chairman, Faculty of Accounting.

Arthur Young & Co. Fellowship

Eligible field: Accounting.

Period of award: Three quarters.

Stipend: $1,125.

Method of review: By faculty committee.

Address inquiries to: Chairman, Faculty of Accounting.

Ernst & Ernst Fellowship

Eligible field: Accounting.

Period of award: Three quarters.

Stipend: $1,500.

Method of review: By faculty committee.

Address inquiries to: Chairman, Faculty of Accounting.

Price Waterhouse Fellowship

Eligible field: Accounting.

Period of award: Three quarters.

Stipend: $1,000.

Method of review: By faculty committee.

Address inquiries to: Chairman, Faculty of Accounting.

Richard D. Baker Fellowship

Eligible field: Accounting.

Period of award: Three quarters.

Stipend: $2,000 (approximately)

Method of review: By faculty committee.

Address inquiries to: Chairman, Faculty of Accounting.

National Defense Education Act Fellowships—Title IV

See page 105.

AERONAUTICAL AND ASTRONAUTICAL ENGINEERING

General Electric Fellowship

Eligible fields: Aeronautical and astronautical engineering.

Qualifications: Must be a citizen of the United States. Must be a Ph.D. candidate in aeronautical and astronautical engineering.

Period of award: Four quarters.

Stipend: $3,900.

Other allowances: Tuition, instructional and general fees, student services fees, and research materials.

Method of review: By Departmental committee with approval of the General Electric Company.

Deadline date: March 15.

Address inquiries to: Chairman, Department of Aeronautical and Astronautical Engineering.
Goodyear Fellowship

Eligible fields: Aeronautical and astronautical engineering.

Qualifications: Must be a citizen of the United States. Must be a Ph.D. candidate in aeronautical and astronautical engineering.

Period of award: Three quarters.
Stipend: $2,925.
Other allowances: Tuition, instructional and general fees, student services fees, and research materials.
Method of review: By Departmental committee, with approval of Goodyear Tire and Rubber Company.
Deadline date: March 15.
Address inquiries to: Chairman, Department of Aeronautical and Astronautical Engineering.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.
For additional fellowships, see Science and Engineering listing on page 106.

AGRICULTURAL ECONOMICS
National Science Foundation Graduate Fellowships and Traineeships
See page 107.

AGRICULTURAL ENGINEERING
Clay Drain Tile Manufacturers Fellowship
Eligible field: Agricultural drainage.
Period of award: Four quarters.
Stipend: $3,000.
Method of review: By Departmental committee.
Deadline date: None, preferably March 1.
Address inquiries to: Chairman, Departmental Graduate Committee.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

ANATOMY
National Science Foundation Graduate Fellowships and Traineeships
See page 107.
See fellowships under Science and Engineering listing on page 106.

ANIMAL SCIENCE
Battelle-Columbus Laboratories Fellowships
See page 106.
National Science Foundation Graduate Fellowships and Traineeships.
See page 107.

ANTHROPOLOGY
Mershon National Graduate Fellowships
See page 104.
National Defense Education Act Fellowships—Title IV
See page 105.
National Defense Foreign Language Fellowships—Title VI
See page 105.
National Institutes of Health Predoctoral Fellowships
See page 107.
National Science Foundation Graduate Fellowships and Traineeships
See page 107.

ARCHITECTURE
Office of Civil Defense Fellowships
Eligible field: Architecture.
Period of award: One academic year (renewal for a second academic year).
Stipend: $2,200.
Other allowances: Tuition, instructional and general fees, and student services fees.
Method of review: By School and OCD committees.
Address inquiries to: Director, School of Architecture.

American Institute of Architects Foundation Fellowships
A number of graduate fellowships are available to present fifth-year and graduate students in accredited schools of architecture through the American Institute of
Architects Foundation. Address all inquiries to Scholarship Program, Department of Educational Programs, The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006.

ASTRONOMY
National Defense Education Act Fellowships — Title IV
See page 105.
National Science Foundation Graduate Fellowships and Traineeships
See page 107.

BIOCHEMISTRY
Herman Frasch Foundation Fellowship
Eligible field: Biochemistry (metabolic control mechanisms).
Period of award: One calendar year (four quarters).
Stipend: $3,000 to $3,600 per annum, depending on qualifications.
Method of review: By faculty committee.
Deadline date: February 1, if beginning study in the Autumn Quarter. Otherwise, applications will be accepted throughout the year.
Address inquiries to: Dean, College of Biological Sciences.

Allied Chemical Company Fellowship
Eligible field: Biochemistry.
Period of award: One calendar year (four quarters).
Stipend: $3,000 per annum.
Method of review: By faculty committee.
Deadline date: February 1, if beginning study in the Autumn Quarter. Otherwise, applications will be accepted throughout the year.
Address inquiries to: Dean, College of Biological Sciences.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

For additional fellowships, see Science and Engineering listing on page 106.

BIOPHYSICS
National Science Foundation Graduate Fellowships and Traineeships
See page 107.

See fellowships under Science and Engineering listing on page 106.

BOTANY
Muellhaupt Fellowships
See page 107.
National Defense Education Act Fellowships — Title IV
See page 105.
National Institutes of Health Predoctoral Fellowships
See page 107.
National Science Foundation Graduate Fellowships and Traineeships
See page 107.

BUSINESS ADMINISTRATION
Harold L. Bache Foundation Scholarship
Eligible field: Business administration.
Period of award: Three quarters.
Stipend: $1,000.
Method of review: By faculty committee.
Address inquiries to: Director, Graduate Business Programs.

Ohio Scholarship of the Central States Graduate School of Banking.
Eligible field: Finance and banking.
Period of award: Three quarters.
Stipend: $2,000.
Method of review: By faculty recommendation.
Address inquiries to: Director, Graduate Business Programs.

Anna M. Dice Memorial Fellowship
Eligible field: Money and banking.
Qualification: Granted for Ph.D. study or postdoctoral work.
Period of award: Three quarters.
Stipend: $1,800.
Method of review: By interdisciplinary committee.
Address inquiries to: Dean, College of Administrative Science.

Walter E. Heller Fellowship
Eligible field: Master of Business Administration study.
Period of award: Three quarters.
Stipend: $1,000.
Method of review: By faculty committee.
Address inquiries to: Director, Graduate Business Programs.
Fred B. and Mabel Dean Hill Fellowship
Eligible field: Consumer credit.
Period of award: Three quarters; may be extended for an additional quarter.
Stipend: $3,600.
Other allowances: Reimbursement for travel and research assistance.
Method of review: By faculty committee.
Address inquiries to: Director, Graduate Business Programs.

National Defense Education Act Fellowships—Title IV
See page 105.

William Green Memorial Fellowships
See page 106.

Robert W. Schiff Fellowship
Eligible field: Marketing.
Period of award: Three quarters.
Stipend: $1,200.
Method of review: By faculty committee.
Address inquiries to: Director, Graduate Business Programs.

CERAMIC ENGINEERING

Battelle-Columbus Laboratories Fellowships
See page 106.

Corning Glass Works Fellowship
Eligible field: Ceramic engineering.
Period of award: Four quarters.
Stipend: $3,300 to $3,600.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Ceramic Engineering.

Charles Taylor Sons Company Fellowship
Eligible field: Ceramic engineering.
Period of award: Four quarters.
Stipend: $3,300 to $3,900.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Ceramic Engineering.

Edward Orton, Jr. Fellowship
Eligible field: Ceramic engineering.
Period of award: Three or four quarters.
Stipend: $1,800 to $2,400.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Ceramic Engineering.

Edward Orton, Jr. Ceramic Foundation Fellowship
Eligible field: Ceramic engineering.
Period of award: Three or four quarters.
Stipend: $1,800 to $2,400.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Ceramic Engineering.

Ferro Corporation Fellowship
Eligible field: Ceramic engineering.
Period of award: Four quarters.
Stipend: $3,300 to $3,900.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Ceramic Engineering.

Foundation in Refractories Education Fellowship
Eligible field: Ceramic engineering.
Period of award: Four quarters.
Stipend: $3,300 to $3,900.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Ceramic Engineering.

John L. Carruthers Fellowship
Eligible field: Ceramic engineering.
Period of award: Four quarters.
Stipend: $3,300 to $3,900.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Ceramic Engineering.

Owens-Illinois Fellowship
Eligible field: Ceramic engineering.
Period of award: Four quarters.
Stipend: $3,300 to $3,900.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Ceramic Engineering.

Minnesota Mining & Manufacturing Company
Eligible field: Ceramic engineering.
Period of award: Four quarters.
Stipend: $3,300 to $3,900.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Ceramic Engineering.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.
For additional fellowships, see Science and Engineering listing on page 106.

CHEMICAL ENGINEERING

American Cyanamid Company Fellowship
Eligible fields: Chemical engineering and chemistry (chemistry 1970-71).
Period of award: Four quarters.
Stipend: $2,300.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By Departmental committee.
Deadline date: March 15.
Address inquiries to: Chairman of the appropriate department.
Note: The grant is to strengthen teaching in the Departments of Chemical Engineering and Chemistry. Use of this grant for a fellowship is optional.

American Oil Company Fellowship
Eligible fields: Chemical engineering and chemistry (chemical engineering 1970-71).
Period of award: Four quarters.
Stipend: $3,600.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Special conditions: Restricted to doctoral candidates in chemistry and chemical engineering who plan careers in college teaching.
Address inquiries to: Chairman of the appropriate department.

Battelle-Columbus Laboratories Fellowships
See page 106.

Dow Chemical Company Fellowship
Eligible field: Chemical engineering.
Qualifications: Must be male and a citizen of the United States.
Period of award: Three quarters.
Stipend: $2,300.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By Departmental committee, with approval of Dow Chemical Fellowship Committee.
Address inquiries to: Chairman, Department of Chemical Engineering.

Esso Research and Engineering Company Fellowship
Eligible fields: Chemical engineering.
Qualifications: Must be male and a citizen of the United States.
Period of award: Three quarters.
Stipend: $2,300.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By Departmental committee, with approval of Esso Research and Engineering Company Fellowship Committee.
Address inquiries to: Chairman, Department of Chemical Engineering.

Union Carbide Corporation Fellowship
(Union Carbide Chemical Co. Division)
Eligible field: Chemical engineering.
Period of award: Three quarters.
Stipend: $2,300.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By Departmental committee, with approval of Union Carbide Chemicals Company, Division of Union Carbide Corporation Fellowship Committee.
Address inquiries to: Chairman, Department of Chemical Engineering.

Lubrizol Foundation Fellowship
Eligible field: Chemical engineering.
Qualifications: Must be male and a citizen of the United States; must have completed one year of graduate work in chemical engineering.
Period of award: Three quarters.
Stipend: $2,300.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Conditions: Student may spend full time on his academic program, including research,
or spend half of his time as a teaching assistant and other half on his academic program including research.

Method of review: By Departmental committee, with approval of Lubrizol Fellowship Committee.

Address inquiries to: Chairman, Department of Chemical Engineering.

Proctor and Gamble Company Fellowship

Eligible field: Chemical engineering.

Qualifications: Must be male and a citizen of the United States.

Period of award: Three quarters.

Stipend: $2,300.

Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.

Method of review: By Departmental committee, with approval of Proctor and Gamble Company Fellowship Committee.

Address inquiries to: Chairman, Department of Chemical Engineering.

Shell Company Foundation Fellowship

Eligible field: Chemical engineering.

Qualifications: Must be male and a citizen of the United States; preference given to Ph.D. candidates.

Period of award: Three quarters.

Stipend: $2,300.

Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.

Method of review: By Departmental committee, with approval of Shell Company Foundation Fellowship Committee.

Address inquiries to: Chairman, Department of Chemical Engineering.

National Science Foundation Graduate Fellowships and Traineeships

See page 107.

For additional fellowships, see Science and Engineering listing on page 106.

CHEMISTRY

American Cyanamid Graduate Fellowship

Eligible fields: Chemistry and chemical engineering (chemistry 1970-71).

Qualifications: Must be a citizen of the United States. Restricted to graduate students who have been in residence at The Ohio State University at least one year.

Period of award: Three quarters.

Stipend: $2,106.

Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.

Method of review: By Departmental committee.

Deadline date: March 15.

Address inquiries to: Academic Vice Chairman, Department of Chemistry.

American Oil Company Fellowship

Eligible fields: Chemical engineering and chemistry (chemical engineering 1970-71).

Period of award: Four quarters.

Stipend: $3,600.

Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.

Special conditions: Restricted to doctoral candidates in chemistry and chemical engineering who plan careers in college teaching.

Method of review: By Departmental committee.

Address inquiries to: Chairman of the appropriate department.

Battelle-Columbus Laboratories Fellowships

See page 106.
114 FELLOWSHIPS RESTRICTED TO SPECIFIC FIELDS OF STUDY

Period of award: Summer quarter only.
Stipend: $600.
Method of review: By Departmental committee.
Deadline date: May 1.
Address inquiries to: Academic Vice Chairman, Department of Chemistry.

Firestone Tire and Rubber Company Summer Fellowships
Eligible field: Chemistry.
Qualifications: Must have qualified for admission to Graduate School at The Ohio State University.
Period of award: Summer quarter only.
Stipend: $600.
Method of review: By Departmental committee.
Deadline date: May 1.
Address inquiries to: Academic Vice Chairman, Department of Chemistry.

Goodyear Fellowship in Organic Chemistry
Eligible field: Organic chemistry.
Qualifications: Must be a citizen of the United States. Restricted to Ph.D. candidates who have been in residence at The Ohio State University for at least one year.
Period of award: Three quarters.
Stipend: $2,475.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By Departmental committee.
Deadline date: March 15.
Address inquiries to: Academic Vice Chairman, Department of Chemistry.

Lubrizol Foundation Fellowship
Eligible field: Chemistry.
Period of award: Three quarters.
Stipend: $2,106.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Conditions: Student may spend full time on his academic program, including research, or spend half of his time as a teaching assistant and other half on his academic program including research.
Method of review: By Departmental committee with approval of Lubrizol Fellowship Committee.

Address inquiries to: Academic Vice Chairman, Department of Chemistry.

Merk and Company Summer Fellowships
Eligible field: Chemistry.
Qualifications: Must have qualified for admission to Graduate School at The Ohio State University.
Period of award: Summer quarter only.
Stipend: $600.
Method of review: By Departmental committee.
Deadline date: May 1.
Address inquiries to: Academic Vice Chairman, Department of Chemistry.

Monsanto Chemical Company Summer Fellowships
Eligible field: Chemistry.
Qualifications: Must have qualified for admission to Graduate School at The Ohio State University.
Period of award: Summer quarter only.
Stipend: $600.
Method of review: By Departmental committee.
Deadline date: May 1.
Address inquiries to: Academic Vice Chairman, Department of Chemistry.

Phillips Petroleum Company Fellowship
Eligible field: Chemistry.
Qualifications: Restricted to graduate students who have been in residence at The Ohio State University for at least one year.
Period of award: Three quarters.
Stipend: $2,106.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By Departmental committee.
Deadline date: March 15.
Address inquiries to: Academic Vice Chairman, Department of Chemistry.

Sinclair Fellowship in Organic Chemistry
Eligible field: Organic chemistry.
Qualifications: Restricted to graduate students who have been in residence at The Ohio State University for at least one year.
Period of award: Three quarters.
Stipend: $2,106.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.

Method of review: By Departmental committee.

Deadline date: March 15.

Address inquiries to: Academic Vice Chairman, Department of Chemistry.

Smith, Kline & French Summer Fellowships

Eligible field: Chemistry.

Qualifications: Must have qualified for admission to Graduate School at The Ohio State University.

Period of award: Summer quarter only.

Stipend: $600.

Method of review: By Departmental committee.

Deadline date: March 15.

Address inquiries to: Academic Vice Chairman, Department of Chemistry.

Stauffer Chemical Company Fellowship

Eligible field: Chemistry.

Qualification: Restricted to graduate students who have been in residence at The Ohio State University at least one year.

Period of award: Three quarters.

Stipend: $2,106.

Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.

Method of review: By Departmental committee.

Deadline date: March 15.

Address inquiries to: Academic Vice Chairman, Department of Chemistry.

National Defense Education Act Fellowships — Title IV

See page 105.

National Science Foundation Graduate Fellowships and Traineeships

See page 107.

For additional fellowships, see Science and Engineering listing on page 106.

CITY AND REGIONAL PLANNING

Fellowships from outside agencies are available competitively to graduate students in city and regional planning. These include fellowships awarded by the Sears-Roebuck Foundation, Loula D. Lasker Trust, and the United States Department of Housing and Urban Development. Applications are filed with the Division of City and Regional Planning.

CIVIL ENGINEERING

James B. Clow Fellowship

Eligible field: Sanitary engineering.

Qualification: Must be a resident of Ohio or a contiguous state.

Period of award: Three quarters (renewable a second academic year).

Stipend: $1,800.

Method of review: By Departmental committee.

Address inquiries to: Chairman, Department of Civil Engineering.

Stillman W. Robinson Fellowship

See page 108.

National Science Foundation Graduate Fellowships and Traineeships

See page 107.

For additional fellowships, see Science and Engineering listing on page 106.

CLASSICS

National Defense Education Act Fellowships — Title IV

See page 105.

COMPUTER AND INFORMATION SCIENCE

National Science Foundation Graduate Fellowships and Traineeships

See page 107.

For additional fellowships, see Science and Engineering listing on page 106.

DAIRY SCIENCE

National Science Foundation Graduate Fellowships and Traineeships

See page 107.

For additional fellowships, see Science and Engineering listing on page 106.

DAIRY TECHNOLOGY

Ohio Dairy Products Research Fund Fellowship

Eligible field: Dairy technology (chemistry and microbiology, engineering, and management).
Period of award: One year, beginning any quarter (renewable for successive years). Master's degree.

Stipend: $3,000 a calendar year.

Method of review: By Departmental committee.

Approximate number of awards: Two.

Address inquiries to: Chairman, Department of Dairy Technology.

ECONOMICS

Battelle-Columbus Laboratories Fellowships
See page 106.

Central States Conference of Bankers Association Scholarship
Eligible field: Money and banking.
Qualifications: Granted for candidates for master's degree.
Period of award: Three quarters.
Stipend: $2,000.
Address inquiries to: Chairman, Department of Economics.

Dice Beta Gamma Sigma Scholarship
Eligible fields: Business organization and economics.
Qualifications: Graduate member of Beta Gamma Sigma at The Ohio State University and intention to take graduate work at this university.
Period of award: Three quarters.
Stipend: Varies with financial need ($500 to $900).
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Economics.

Anna M. Dice Memorial Fellowship
Eligible field: Money and banking.
Qualifications: Granted for Ph.D. study or postdoctoral work.
Period of award: Three quarters.
Stipend: $1,800.
Method of review: By faculty committee.
Address inquiries to: Chairman, Department of Economics.

Mershon National Graduate Fellowships
See page 104.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

William Green Memorial Fellowships
See page 106.

National Defense Education Act Fellowships — Title IV
See page 105.

EDUCATION

Doctoral Internships in Education
Eligible field: Education.
Qualifications: Must have completed master's degree and exhibit unusual academic and educational leadership potential. Varied internship experience available to and required of successful applicants.
Period of award: Up to eight quarters.
Stipend: $6,000 for a calendar year.
Method of review: Committee on Graduate Studies in Education.
Approximate number of awards: Up to six.
Address inquiries to: Director, Graduate Studies in Education.

Eastman Kodak Fellowship
Eligible field: Education.
Qualifications: Interest in research of teaching media and instructional techniques.
Period of award: Three quarters.
Stipend: $2,500.
Method of review: Committee on Graduate Studies in Education.
Address inquiries to: Director of Graduate Studies in Education.

E. E. Lewis Fellowship
Eligible field: Educational administration.
Qualification: Must be a Ph.D. candidate.
Period of award: Three quarters.
Stipend: $400 to $500.
Method of review: By special committee.
Address inquiries to: Director, Graduate Studies in Education.

Margaret L. White Scholarship
Eligible field: Education.
Qualifications: Member of the Delta Kappa Gamma Sorority engaged in teaching or planning to teach.
Period of award: One, two, or three quarters.
Stipend: $200 a quarter.
Method of review: By State Selection Committee of Delta Kappa Gamma Sorority, with approval by Departmental committee on the M. L. White Scholarship.
Deadline date: Usually three months before the opening of the quarter of year covered by the fellowship.

Approximate number of awards: One a year and sometimes two or three for the quarter.

Address inquiries to: Director, Graduate Studies in Education.

Earl W. Anderson Memorial Award

Eligible field: Education.

Qualifications: Graduate student majoring in higher education.

Period of award: Three quarters.

Stipend: $400.

Method of review: By faculty committee.

Address inquiries to: Director, Graduate Studies in Education.

Maribelle Seely Baker Memorial Scholarship

Eligible field: Education.

Qualification: Competent, deserving student in the teaching of English. In case a suitable candidate does not apply, a student in elementary education will be considered.

Period of award: Three quarters.

Stipend: $1,000.

Method of review: By faculty committee.

Address inquiries to: Director, Graduate Studies in Education.

William R. and Marie A. Flesher Fellowship

Eligible field: Education.

Qualifications: Must be a Ph.D. candidate.

Period of award: Three quarters.

Stipend: $1,000.

Method of review: By faculty committee.

Address inquiries to: Director, Graduate Studies in Education.

National Defense Education Act Fellowships—Title IV

See page 105.

National Science Foundation Graduate Fellowships and Traineeships

See page 107.

Stillman W. Robinson Fellowship

See page 108.

ENGINEERING MECHANICS

National Science Foundation Graduate Fellowships and Traineeships

See page 107.

See fellowships under Science and Engineering listing on page 106.

ENGLISH

National Defense Education Act Fellowships—Title IV

See page 105.

GEODETIC SCIENCE

National Science Foundation Graduate Fellowships and Traineeships

See page 107.
National Defense Education Act
Fellowships — Title IV
See page 105.

GEOGRAPHY
Mershon National Graduate Fellowships
See page 104.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

National Defense Education Act
Fellowships — Title IV
See page 105.

GEOLOGY
John A. Bownocker Fellowship
Eligible field: Geology.
Qualification: Must have completed at least one year of graduate study.
Period of award: One, two, or three quarters.
Stipend: $777 a quarter.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Graduate Committee, Department of Geology.

Ernest J. Carman Fellowship
Eligible field: Geology.
Qualifications: Must have completed at least one year of graduate study.
Period of award: One, two, or three quarters.
Stipend: $825 per quarter.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Graduate Committee, Department of Geology.

National Defense Education Act
Fellowships — Title IV
See page 105.

GERMAN
National Defense Education Act
Fellowships — Title IV
See page 105.

HISTORY
Mershon National Graduate Fellowships
See page 104.

William Green Memorial Fellowships
See page 106.

National Defense Education Act
Fellowships — Title IV
See page 105.

HOME ECONOMICS
Frank Elam Parker Fellowship
Eligible field: Home economics education.
Period of award: Three quarters.
Stipend: $1,000.
Method of review: By faculty committee.
Address inquiries to: Director, School of Home Economics.

Gladys Branegan Graduate Fellowship
Eligible field: Home economics.
Period of award: Three quarters.
Stipend: $1,800.
Method of review: By faculty committee.
Number of awards: One.
Address inquiries to: Director, School of Home Economics.

Hazel Williams Lapp Fellowship
Eligible field: Food and nutrition.
Period of award: Four quarters.
Stipend: $2,200 to $2,400.
Method of review: By faculty committee.
Address inquiries to: Director, School of Home Economics.

HORTICULTURE AND FORESTRY
Alex Laurie Assistantship of the Ohio Florists' Association
Eligible field: Floriculture.
Qualification: Must have a B.S. degree in biological sciences.
Period of award: Four quarters and may be renewed.
Stipend: $2,880.
Special condition: Approximately 20 hours a week devoted to Departmental work.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Horticulture and Forestry.

Helena Chamberlain Fellowship
Eligible fields: Floriculture and ornamental horticulture, fruit and vegetable processing and technology, vegetable crops, and pomology.
Qualification: Must have a B.S. degree in biological sciences.
Period of award: Four quarters and may be renewed.
Stipend: $3,000.
Method of review: By Departmental committee.
Number of awards: Four.
Address inquiries to: Chairman, Department of Horticulture and Forestry.

Ohio Florists' Association Assistantship
Eligible field: Floriculture.
Qualification: Must have a B.S. degree in biological sciences.
Period of award: Four quarters and may be renewed.
Special condition: Approximately 20 hours a week devoted to Departmental work.
Stipend: $2,880.
Method of review: By Departmental committee.
Number of awards: One or two.
Address inquiries to: Chairman, Department of Horticulture and Forestry.

Ohio Nurserymen's Association Assistantship
Eligible field: Ornamental horticulture.
Qualification: Must have a B.S. degree in biological sciences. Research must be in problems pertaining to production, sale, and use of nursery stock.
Period of award: Four quarters and may be renewed.
Stipend: $2,880.
Special condition: Approximately 20 hours a week given to Departmental work.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Horticulture and Forestry.

Ohio State Floriculture Alumni Association Assistantship
Eligible field: Floriculture and ornamental horticulture.
Qualification: Must have a B.S. degree in biological science.
Period of award: Four quarters and may be renewed.
Stipend: $2,880.
Special condition: Approximately 20 hours a week given to Departmental work.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Horticulture and Forestry.

National Science Foundation Graduate Fellowships
See page 107.

Victor H. Ries Assistantship
Eligible field: Floriculture and ornamental horticulture.
Qualification: Must have a B.S. degree in biological sciences.
Period of award: Four quarters and may be renewed.
Stipend: $2,880.
Special condition: Approximately 20 hours a week given to Departmental work.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Horticulture and Forestry.

INDUSTRIAL ENGINEERING
See fellowships under Science and Engineering listing on page 106.

LINGUISTICS

National Defense Education Act Fellowships — Title IV
See page 105.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

MATHEMATICS

Battelle-Columbus Laboratories Fellowships
See page 106.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.
National Defense Education Act Fellowships — Title IV
See page 105.

MECHANICAL ENGINEERING
Battelle-Columbus Laboratories Fellowships
See page 106.

Kaiser Aluminum and Chemical Corporation Fellowship
Eligible field: Mechanical engineering.
Qualification: Must be a citizen of the United States.
Period of award: Three quarters.
Stipend: $2,250.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Mechanical Engineering.

Linde Company Fellowship
Eligible field: Mechanical engineering.
Qualification: Must be a citizen of the United States.
Period of award: Three quarters.
Stipend: $2,250.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Mechanical Engineering.

Stillman W. Robinson Fellowship
See page 108.

United States Steel Foundation Fellowships
Eligible field: Mechanical engineering.
Qualification: Must be a citizen of the United States.
Period of award: Six quarters.
Stipend: $2,270 for three quarters if single; $2,870 for three quarters if married.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Mechanical Engineering.

National Defense Education Act Fellowships — Title IV
See page 105.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

MEDICAL MICROBIOLOGY
National Science Foundation Graduate Fellowships and Traineeships
See page 107.

National Institutes of Health Predoctoral Fellowships
See page 107.

United States Public Health Service Training Grant — Medical Microbiology
The Department has a number of stipends available for predoctoral and postdoctoral trainees in medical microbiology and infectious diseases. Applicants for these stipends are considered on an individual basis by the Graduate Committee of the Department.

MICROBIOLOGY
Muelhaupt Fellowships
See page 107.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

MINERALOGY
William J. McCaughey Fellowship
Eligible field: Mineralogy.
Period of award: Three quarters.
Stipend: $2,250.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Mineralogy.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.
For additional fellowships, see Science and Engineering listing on page 106.

MUSIC
Several grants are available in music including Joseph H. Leeder Fellowship, the Ohio Federation of Music Clubs Fellowship, and the Mary Osburn Memorial Fund Graduate Scholarship. (See page 105.) Address inquiries to the School of Music.

National Defense Education Act Fellowship (Music Education and Music History)
—Title IV
See page 105.
NUCLEAR ENGINEERING

Atomic Energy Commission Fellowships
See page 106.

Battelle-Columbus Laboratories Fellowships
See page 106.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

NURSING

United States Department of Health, Education, and Welfare; National Institutes of Health, Bureau of Health Manpower; Division of Nursing; Professional Nurse Traineeships for Preparation for Administration, Clinical Specialty, Supervision, and Teaching.

Eligible field: Nursing.

Qualifications: Must be graduate of a state-approved school of nursing and a citizen of the United States.

Period of award: Six quarters for work toward master's degree. Registered Nurses who are Ph.D. candidates may reapply for the grant.

Stipend: $2,400 for first year and $2,600 for second year for candidates working toward master's degree; $2,600 a year for candidates working toward Ph.D. degree in education, sociology, or physiology.

Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees; plus travel to the University; dependency allowance of $500 a year for each eligible dependent.

Special conditions: Must intend to complete program and remain active in nursing for a reasonable length of time.

Method of review: By faculty committee.

Deadline date: One month before quarter begins.

Approximate number of awards: 25 to 30.

Address Inquiries to: Director, School of Nursing.

OPTOMETRY

Emil H. Arnold Fellowship

Eligible field: Physiological optics.

Qualification: Preference given to a resident of Michigan.

Period of award: Three quarters. Awarded periodically as funds become available.

Stipend: $1,800.

Method of review: By faculty committee.

Address inquiries to: Dean, College of Optometry.

See National Institutes of Health Predoctoral Fellowships.

See page 107.

PATHOLOGY

Cancer Control Program of the United States Public Health Service Fellowship

Eligible field: Clinical pathology.

Qualifications: (1) B.S. or B.A. degree from accredited institution; (2) passing grade on the Registry examination, M.T. (ASCP); (3) one year of hospital (clinical) laboratory experience.

Period of award: 15 months.

Stipend: $3,000.

Method of review: By Departmental committee.

Deadline date: Admission must be received and approved for the appropriate quarter of enrollment.

Address inquiries to: Vice Chairman, Department of Pathology.

Similar fellowships are available under a separate grant from the Division of Health Manpower Educational Services of the Public Health Services.

PHARMACOLOGY

Pharmacology Training Grant

Eligible field: Pharmacology. See the special fields of interest in the pharmacology program description.

Qualifications: Must meet the requirements of the Department. Must be a United States citizen.

Period of award: Four quarters; may be renewed to continue work for degree.

Stipend: $2,400 to $2,800.

Additional allowance: Dependency allowances; tuition, instructional and general fees, and student services fees; plus some research supply and travel funds.

Method of review: By Departmental committee.

Address inquiries to: Chairman, Department of Pharmacology.

See fellowships under Science and Engineering listing on page 106.
PHARMACY

American Foundation for Pharmaceutical Education Fellowships
Eligible field: Pharmaceutical sciences.
Period of award: Four quarters; renewable upon application.
Stipend: $1,800 to $2,400.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Deadline date: March 15.
Address inquiries to: American Foundation for Pharmaceutical Education, 777 14th St., N.W., Washington, D.C. 20005.

National Institutes of Health Predoctoral Fellowships
See page 107.

National Defense Education Act Fellowship (Title IV)
See page 105.

National Institute of Dental Research—Training Grant
Eligible field: Pharmaceutical sciences.
Qualifications: Must be a United States citizen. Must hold the D.D.S. degree.
Period of award: Four quarters; renewable.
Stipend: $6,000.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees. Dependency allowance for each eligible dependent.
Deadline date: April 1.
Address inquiries to: Dean, College of Pharmacy.

Parke Davis & Company Fellowship
Eligible field: Pharmaceutics.
Period of award: Four quarters; renewable.
Stipend: $3,000.
Other allowances: Tuition, instructional and general fees, and student services fees.
Method of review: By College committee at Parke Davis & Company.
Address inquiries to: Dean, College of Pharmacy.

Upjohn Fellowship
Eligible field: Pharmaceutical sciences.
Period of award: Four quarters; renewable.
Stipend: $3,000.
Other allowances: Tuition, instructional and general fees, and student services fees.
Address inquiries to: Dean, College of Pharmacy.

PHILOSOPHY

National Defense Education Act Fellowships — Title IV
See page 105.

PHYSICAL EDUCATION

National Defense Education Act Fellowships — Title IV
See page 105.

PHYSICS

Battelle-Columbus Laboratories Fellowships
See page 106.

National Defense Education Act Fellowships — Title IV
See page 105.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

Warren-Teed Pharmaceuticals, Inc., Fellowship
Eligible fields: Pharmacognosy and natural products chemistry.
Period of award: Four quarters.
Stipend: $3,000.
Other allowances: Tuition, instructional and general fees, and student services fee.
Address inquiries to: Dean, College of Pharmacy.

PHYSIOLOGICAL CHEMISTRY

Battelle-Columbus Laboratories Fellowships
See page 106.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.
PHYSIOLOGY
Muellhaupt Fellowships
See page 107.

National Science Foundation Traineeships
See page 107.
For additional fellowships, see Science and Engineering listing on page 106.

PLANT PATHOLOGY
National Science Foundation Graduate Fellowships and Traineeships
See page 107.

POLITICAL SCIENCE
Alberta Garber Scott Fellowship in Sociology
See page 106.

Mershon National Graduate Fellowships
See page 104.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

William Green Memorial Fellowships
See page 106.

National Defense Education Act Fellowships — Title IV
See page 105.

POULTRY SCIENCE
Ohio Poultry Research Fund Fellowships
Eligible fields: Avian physiology, genetics, nutrition, pathology, and poultry products technology and marketing.
Period of award: Four quarters, beginning any quarter (renewable for successive years).
Stipend: $2,700 to $3,600 per calendar year, depending upon degree and stage of progress.
Method of review: By Departmental committee.
Approximate number of awards: Two.
Address inquiries to: Chairman, Department of Poultry Science.

PREVENTIVE MEDICINE
Atomic Energy Commission Fellowship
Eligible field: Occupational medicine.
Qualifications: Degree in medicine, one year internship, citizen of the United States.
Period of award: One year; renewable for second.
Stipend: $7,500 a year and $500 for each dependent (limit of three dependents).
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees.
Method of review: By national committee.
Deadline date: Applications before December 31.
Address inquiries to: Secretary, Fellowship Committee, AEC Industrial Medicine, P. O. Box 287, Station 3, Rochester, New York 14620.
Prior acceptability by University is desirable (November 1).

National Aeronautics and Space Administration — Postdoctoral Fellowship in Aerospace Medicine
Eligible field: Aerospace medicine.
Qualifications: Degree in medicine, one year internship, citizen of the United States.
Period of award: One year; renewable.
Stipend: $6,000 annually.
Other allowances: Tuition, instructional and general fees, and student services fees; plus additional hardship allowance when required.
Method of review: By Departmental committee.
Deadline date: Applications must be received by November 1.
Address inquiries to: Chairman, Department of Preventive Medicine.

National Institutes of Health—Postdoctoral Research Training Fellowship
Eligible field: Environmental medicine (occupational medicine, aerospace medicine, and related fields).
Qualifications: Degree in medicine, one year internship, citizen of the United States.
Period of award: One year; renewable.
Stipend: $5,500-$7,500 annually according to number of dependents.
Other allowances: Tuition, instructional and general fees, and student service fees.
Method of review: By Departmental committee.
Deadline date: Applications must be received by November 1.
Address inquiries to: Chairman, Department of Preventive Medicine.
In addition there are fellowships in aerospace medicine supported by the North American Aviation, Inc., and Link Foundation. Address inquiries to the Chairman, Department of Preventive Medicine.

**PSYCHOLOGY**

**Mershon National Graduate Fellowships**  
See page 104.

**National Institutes of Health Fellowships**  
See page 107.

**National Science Foundation Graduate Fellowships and Traineeships**  
(Clinical psychology excluded)  
See page 107.

**William Green Memorial Fellowships**  
See page 106.

**National Defense Education Act Fellowships — Title IV**  
See page 105.

**ROMANCE LANGUAGES**

**National Defense Education Act Fellowships — Title IV**  
See page 105.

**SLAVIC LANGUAGES AND LITERATURES**

**National Defense Education Act Fellowships — Title IV**  
See page 105.

**SOCIAL WORK**

**Family and Children’s Bureau Stipend**  
_Eligible field:_ Casework.  
_Period of award:_ Three quarters.  
_Stipend:_ Up to $1,500.  
_Method of review:_ By School of Social Work committee.  
_Address inquiries to:_ Director, School of Social Work.

**Gladysce Grayse Holy Scholarship**  
_Eligible field:_ Social group work.  
_Period of award:_ Three quarters.  
_Stipend:_ Up to $1,000, available every two or three years.

**Method of review:_ Executive Director, Central Community House, Columbus, Ohio, and Director, School of Social Work.  
_Address inquiries to:_ Director, School of Social Work.

**National Institutes of Mental Health Traineeship**  
_Eligible field:_ Social work in correctional or mental health settings.  
_Period of award:_ Three quarters; renewable.  
_Stipend:_ First year students, $1,800; second year students, $2,000.  
_Other allowances:_ Tuition, instructional and general fees, and student services fees.  
_Method of review:_ By School of Social Work committee.  
_Address inquiries to:_ Director, School of Social Work.

**Robert G. Paterson Memorial Scholarship**  
_Eligible field:_ Community health organization.  
_Period of award:_ Three quarters.  
_Stipend:_ $600.  
_Other allowances:_ Tuition, instructional and general fees, and student services fees.  
_Method of review:_ By special committee.  
_Address inquiries to:_ Director, School of Social Work.

**School of Social Work Alumni Scholarship in Community Organization**  
_Eligible field:_ Community organization.  
_Period of award:_ Three quarters.  
_Stipend:_ Approximately $1,800.  
_Method of review:_ By faculty committee.  
(Address inquiries to:_ Director, School of Social Work.

**Alberta Garber Scott Fellowship in Sociology**  
See page 106.

**Max, Martha, and Alfred M. Stern Scholarship**  
_Eligible field:_ Social work (any area).  
_Qualification:_ Must be enrolled in Cincinnati Center, School of Social Work.  
_Period of award:_ Three quarters.  
_Stipend:_ Up to $2,000.  
_Method of review:_ By faculty committee.  
_Address inquiries to:_ Director, School of Social Work.
C. C. Stillman Memorial Scholarship
Eligibility field: Community organization.
Period of award: One, two, or three quarters.
Stipend: Up to $1,200.
Method of review: By faculty committee.
Address inquiries to: Director, School of Social Work.

United States Department of Health, Education, and Welfare Fellowships
Eligible field: Social work with or on behalf of children.
Period of award: Three quarters.
Stipend: $2,000.
Additional allowances: Remission of all academic fees.
Address inquiries to: Director, School of Social Work.

SOCIOLOGY
Mershon National Graduate Fellowships
See page 104.

National Defense Education Act Fellowship—Title IV
See page 105.

National Institutes of Health and Vocational Rehabilitation Fellowships
Eligible field: Medical sociology.
Period of award: Three or four quarters; renewable.
Stipend: $1,800 to $3,400.
Other allowances: Tuition, instructional and general fees, and student services fees.
Method of review: By Departmental committee.
Approximate number of awards: 15.
Address inquiries to: Chairman, Department of Sociology.

Alberta Garber Scott Fellowship in Sociology
See page 106.

National Institutes of Health Fellowships
See page 107.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

William Green Memorial Fellowships
See page 106.

SPEECH
Department of Health, Education, and Welfare Fellowships
(Bureau of Education for the Handicapped)
Eligible field: Speech and hearing.
Qualification: Pre-master's and post-master's.
Period of award: Three quarters.
Stipend: $2,200 and $3,200.
Other allowances: Tuition, instructional and general fees, and student services fees; plus allowances for eligible dependents.
Method of review: By speech and hearing area committee.
Approximate number of awards: Three pre-master's; two post-master's.
Address inquiries to: Chairman, Department of Speech.

In-Service Management Traineeships
Eligible field: Speech and hearing.
Qualifications: Master's degree or equivalent.
Period of award: One quarter to a maximum of two calendar years.
Stipend: $900 a quarter.
Other allowances: Tuition, instructional and general fees, and student services fees.
Method of review: By speech and hearing area committee.
Approximate number of awards: 8.
Address inquiries to: Chairman, Department of Speech.

National Defense Education Act Fellowships—Title IV
See page 105.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

Vocational Rehabilitation Administration Traineeships
Eligible field: Speech and hearing.
Qualification: Master's candidate.
Stipend: $600 a quarter.
Other allowances: Tuition, instructional and general fees, and student services fees.
Method of review: By speech and hearing area committee.
Approximate number of awards: 15.
Address inquiries to: Chairman, Department of Speech.
THEATRE
National Defense Education Act Fellowships (Title IV)
See page 105.

WELDING ENGINEERING
Air Reduction Fellowship
Eligible field: Welding engineering.
Period of award: Three quarters.
Stipend: $2,400 if single; $3,000 if married.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Welding Engineering.

American Welding & Manufacturing Company Fellowship
Eligible field: Welding engineering.
Period of award: Four quarters.
Stipend: $1,000.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Welding Engineering.

Battelle-Columbus Laboratories Fellowships
See page 106.

Union Carbide Corporation Fellowship
Eligible field: Welding engineering.
Period of award: Four quarters.
Stipend: $2,400.
Method of review: By Departmental committee.
Address inquiries to: Chairman, Department of Welding Engineering.

National Institutes of Health Traineeships in Acarology
Eligible field: Acarology as relating to problems in public health.
Qualification: Must be a citizen of the United States or a permanent resident.
Period of award: Four quarters; renewable.
Stipend: $2,400 to $2,800.
Other allowances: Tuition, instructional and general fees, student services fees, and laboratory and course fees; plus $500 for each dependent.
Number of awards: Four.
Method of review: By Director, Acarology Laboratory, 1735 Neil Avenue.
Deadline date: None.
Address inquiries to: Dean, College of Biological Sciences, 1958 Neil Avenue.

National Science Foundation Graduate Fellowships and Traineeships
See page 107.

Ohio Cooperative Fishery Unit Fellowships and Assistantships
Eligible field: Fishery, biology, ecology, population dynamics, food chain relationship, physiology, toxicology, parasitology, and taxonomy.
Period of award: Four quarters; renewable.
Stipend: $3,000.
Other allowances: Tuition, instructional and general fees, and student services fees; travel expense reimbursement for research conducted in the field.
Method of review: By the Unit Committee.
Deadline date: None.
Address inquiries to: Leader, Ohio Cooperative Fishery Unit, 21 Botany and Zoology Building, 1735 Neil Avenue.

Ohio Cooperative Wildlife Research Unit Fellowships and Assistantships
Eligible field: Wildlife biology (ecology, physiology, parasitology, radioecology, toxicology, population dynamics, and animal behavior).
Period of award: Four quarters; renewable.
Stipend: $3,000.
Other allowances: Tuition, instructional and general fees, and student services fees; per diem and travel reimbursement for research conducted in the field.
Method of review: By the Unit Committee.
Deadline date: None.

ZOOLOGY AND ENTOMOLOGY
Battelle-Columbus Laboratories Fellowships
See page 106.

Mary H. Osburn Memorial Fund Fellowships
See page 105.

Muellhaupt Fellowships
See page 107.

National Institutes of Health Predoctoral Fellowships
See page 107.
Ohio Division of Wildlife Fellowships and Assistantships

Eligible field: Fishery biology, including pertinent problems in ecology, population dynamics, food chain relationship, physiology, toxicology, and parasitology.

Period of award: Four quarters, renewable. Stipend: $3,000.
Other allowances: Tuition, instructional and general fees, and student services fees. Travel expense reimbursement for research conducted in the field.
Method of review: By the Unit Committee.
Deadline date: None.
Address inquiries to: Leader, Ohio Cooperative Fishery Unit, 21 Botany and Zoology Building, 1735 Neil Avenue.
# Deadline Dates for Graduate Students

## SUMMER QUARTER 1969

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1</td>
<td>Last day for filing Admission to Candidacy for Master's degree</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>July 18</td>
<td>Last day for presenting approved draft of Ph.D. dissertation</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>August 15</td>
<td>Last day for final examination for Master's and Ph.D. degrees</td>
</tr>
<tr>
<td>August 22</td>
<td>Last day for submitting final copies of Master's theses and Ph.D.</td>
</tr>
<tr>
<td></td>
<td>dissertations</td>
</tr>
</tbody>
</table>

## AUTUMN QUARTER 1969

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 15</td>
<td>Last day for filing Admission to Candidacy for Master's degree</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>November 7</td>
<td>Last day for presenting approved draft of Ph.D. dissertation</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>December 5</td>
<td>Last day for final examination for Master's and Ph.D. degrees</td>
</tr>
<tr>
<td>December 12</td>
<td>Last day for submitting final copies of Master's theses and Ph.D.</td>
</tr>
<tr>
<td></td>
<td>dissertations</td>
</tr>
</tbody>
</table>

## WINTER QUARTER 1970

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 20</td>
<td>Last day for filing Admission to Candidacy for Master's degree</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>February 5</td>
<td>Last day for presenting approved draft of Ph.D. dissertation</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>March 5</td>
<td>Last day for final examination for Master's and Ph.D. degrees</td>
</tr>
<tr>
<td>March 12</td>
<td>Last day for submitting final copies of Master's theses and Ph.D.</td>
</tr>
<tr>
<td></td>
<td>dissertations</td>
</tr>
</tbody>
</table>

## SPRING QUARTER 1970

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 14</td>
<td>Last day for filing Admission to Candidacy for Master's degree</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>May 1</td>
<td>Last day for presenting approved draft of Ph.D. dissertation</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>May 29</td>
<td>Last day for final examination for Master's and Ph.D. degrees</td>
</tr>
<tr>
<td>June 5</td>
<td>Last day for submitting final copies of Master's theses and Ph.D.</td>
</tr>
<tr>
<td></td>
<td>dissertations</td>
</tr>
</tbody>
</table>

## SUMMER QUARTER 1970

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 6</td>
<td>Last day for filing Admission to Candidacy for Master's degree</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>July 24</td>
<td>Last day for presenting approved draft of Ph.D. dissertation</td>
</tr>
<tr>
<td></td>
<td>in Graduate School office</td>
</tr>
<tr>
<td>August 21</td>
<td>Last day for final examination for Master's and Ph.D. degrees</td>
</tr>
<tr>
<td>August 28</td>
<td>Last day for submitting final copies of Master's theses and Ph.D.</td>
</tr>
<tr>
<td></td>
<td>dissertations</td>
</tr>
</tbody>
</table>
## Library Calendar 1969-70

The schedule of hours is subject to change. Consult specific library concerned for further information and summer hours.

### MAIN LIBRARY REGULAR SCHEDULE OF HOURS

**Autumn, Winter, and Spring Quarters**

<table>
<thead>
<tr>
<th>Day of Week</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday through Friday</td>
<td>7:45 a.m.-12 midnight</td>
</tr>
<tr>
<td>Saturday</td>
<td>8 a.m.-10 p.m.</td>
</tr>
<tr>
<td>Sunday</td>
<td>1 p.m.-12 midnight</td>
</tr>
</tbody>
</table>

**Summer Schedule**

<table>
<thead>
<tr>
<th>Day of Week</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday through Friday</td>
<td>7:45 a.m.-12 midnight</td>
</tr>
<tr>
<td>Saturday</td>
<td>8 a.m.-5 p.m.</td>
</tr>
<tr>
<td>Sunday</td>
<td>1 p.m.-6 p.m.</td>
</tr>
</tbody>
</table>

**Between-Quarter and Holiday Schedule**

<table>
<thead>
<tr>
<th>Day of Week</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday through Friday</td>
<td>8 a.m.-7 p.m.</td>
</tr>
<tr>
<td>Saturday</td>
<td>8 a.m.-5 p.m.</td>
</tr>
<tr>
<td>Sunday</td>
<td>1 p.m.-6 p.m.</td>
</tr>
</tbody>
</table>

Departmental libraries' regular schedules are listed below. Between-quarter and holiday hours vary. Schedules are posted in these libraries and also in the Main Library.

### SUMMER QUARTER 1969

- **June 17**: Begin Summer Quarter hours.
- **July 4**: Independence Day—All libraries closed.
- **August 30**: Begin Between-Quarter Schedule at 5 p.m.

### AUTUMN QUARTER 1969

- **August 31-September 1**: Labor Day Weekend—All libraries closed.
- **October 1**: Begin Autumn Quarter hours.

### DEPARTMENT AND OTHER LIBRARIES—Autumn, Winter, and Spring Quarters

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aero-Civil Engr., 322 Civil Aero. Engr. Bldg.</td>
<td>8-10</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Agriculture, 45 Agricultural Admin. Bldg.</td>
<td>8-10</td>
<td>8-5</td>
<td>8-1</td>
<td>Closed</td>
</tr>
<tr>
<td>Agronomy Dept., 111 Townsend Hall</td>
<td>8-12; 1-5</td>
<td>8-12; 1-5</td>
<td>1-5</td>
<td>Closed</td>
</tr>
<tr>
<td>Botany &amp; Zoology, 20 Botany &amp; Zoology Bldg.</td>
<td>8-10</td>
<td>8-10</td>
<td>8-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Brown, 103 Brown Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Buckeye Village</td>
<td>7-12 mid.</td>
<td>7-12 mid.</td>
<td>2-12 mid.</td>
<td>2-6</td>
</tr>
<tr>
<td>Chemistry, 310 McPherson Chem. Lab.</td>
<td>8-10</td>
<td>8-5</td>
<td>9-12 noon</td>
<td>2-5, 5-30-9:30, 12:30-5, 12-5</td>
</tr>
<tr>
<td>Children's Hospital, 561 S. 17th St.</td>
<td>8:30-9:30</td>
<td>8:30-9:30</td>
<td>9-12 noon</td>
<td>2-10</td>
</tr>
<tr>
<td>Commerce, 204 Page Hall</td>
<td>8-10</td>
<td>8-10</td>
<td>8-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Davis Welding, 200 Welding Engr. Labs.</td>
<td>8-5</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Education, 060 Arps Hall</td>
<td>7:30-10</td>
<td>7:30-10</td>
<td>8-5</td>
<td>2-6</td>
</tr>
<tr>
<td>Electrical Engineering, 162 Caldwell Lab</td>
<td>8-10</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>English Dept., 15-15C Derby Hall</td>
<td>8-5; 7-10</td>
<td>8-5</td>
<td>9-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Fine Arts, 204 Main Library</td>
<td>8-10</td>
<td>8-10</td>
<td>8-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Health Center, 101 Hamilton Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Home Economics, 325 Campbell Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td>Journalism, 109 Journalism Bldg.</td>
<td>8-10</td>
<td>8-5</td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td>Law, 219 Law Bldg.</td>
<td>7:45-12</td>
<td>7:45-12</td>
<td>8-10</td>
<td>1-12</td>
</tr>
<tr>
<td>Materials Engr., 197 Watts Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Mathematics, 010 Mathematics Bldg.</td>
<td>8-10</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Mechanical Engineering, 2071 Robinson Lab.</td>
<td>8-5</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Microbiology, 7 Cockins Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Music, 101 Hughes Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>8-12 noon</td>
<td>Closed</td>
</tr>
<tr>
<td>Orton, 100 Orton Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>2-10</td>
<td></td>
</tr>
<tr>
<td>Perkins Observatory (Delaware)</td>
<td>8:30-2</td>
<td>Closed</td>
<td>Closed</td>
<td>Closed</td>
</tr>
<tr>
<td>Pharmacy, 207 Pharmacy Bldg.</td>
<td>8-10</td>
<td>8-5</td>
<td>8-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Physics, 1011 A. W. Smith Lab.</td>
<td>8-10</td>
<td>8-10</td>
<td>Closed</td>
<td>Closed</td>
</tr>
<tr>
<td>Pomerene-Women's Physical Education, 307 Pomerene Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>8-12</td>
<td>Closed</td>
</tr>
<tr>
<td>Social Work, 400 Stillman Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>8-5</td>
<td>2-10</td>
</tr>
<tr>
<td>Topaz, 114 Optometry Bldg.</td>
<td>8-5</td>
<td>8-5</td>
<td>8-12</td>
<td>Closed</td>
</tr>
<tr>
<td>Veterinary Medicine, 229 Sisson Hall</td>
<td>8-10</td>
<td>8-5</td>
<td>8-1</td>
<td>2-6</td>
</tr>
</tbody>
</table>
### Summer Quarter 1969

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 1</td>
<td>Last day for filing complete undergraduate applications for admission (Thurs.)</td>
</tr>
<tr>
<td>June 2</td>
<td>Last day for filing complete Graduate School applications for admission (Mon.)</td>
</tr>
<tr>
<td>June 13</td>
<td>Last day for filing schedule cards (Fri.)*</td>
</tr>
<tr>
<td>June 16</td>
<td>Welcome Program for all new students (Mon.)</td>
</tr>
<tr>
<td>June 17</td>
<td>Classes begin, 8:00 a.m. (Tues.)</td>
</tr>
<tr>
<td>June 30</td>
<td>Last day for withdrawal from the University for the First Term with any refund of fees (Mon.)</td>
</tr>
<tr>
<td>July 4</td>
<td>Legal Holiday—Independence Day—No classes—Offices closed (Fri.)</td>
</tr>
<tr>
<td>July 14</td>
<td>Last day for withdrawal from the University for the Quarter with any refund of fees (Quarter students) (Mon.)</td>
</tr>
<tr>
<td>July 18</td>
<td>Last day for payment of Second Term fees (Fri.)</td>
</tr>
<tr>
<td>July 21-22</td>
<td>Final Examinations—First Term (at regular class hours) (Mon. and Tues.)</td>
</tr>
<tr>
<td>July 22</td>
<td>First Term ends, 12:00 Midnight (Tues.)</td>
</tr>
<tr>
<td>July 23</td>
<td>Second Term begins, 8:00 a.m. (Wed.)</td>
</tr>
<tr>
<td>July 30</td>
<td>First day Autumn Quarter schedule cards are available (Wed.)</td>
</tr>
<tr>
<td>July 31</td>
<td>First day for filing Autumn Quarter schedule cards in college offices (Thurs.)</td>
</tr>
<tr>
<td>August 5</td>
<td>Last day for withdrawal from the University for the Second Term with any refund of fees (Tues.)</td>
</tr>
<tr>
<td>August 25-26</td>
<td>Final Examinations—Second Term (at regular class hours) (Mon. and Tues.)</td>
</tr>
<tr>
<td>August 26</td>
<td>Last day of regularly scheduled classes (Tues.)</td>
</tr>
<tr>
<td>August 27-29</td>
<td>Final Examinations for the Quarter (Wed. through Fri.)</td>
</tr>
<tr>
<td>August 30</td>
<td>Summer Convocation (Commencement), 9:00 a.m., St. John Arena (Sat.)</td>
</tr>
<tr>
<td>August 30</td>
<td>Summer Convocation (Commencement), 12:00 Midnight (Sat.)</td>
</tr>
<tr>
<td>August 30</td>
<td>Last day for students enrolled Summer or Spring Quarter to file Autumn Quarter schedule cards (Sat. Noon)</td>
</tr>
</tbody>
</table>

* Except newly admitted Graduate School students. The final date for these students will be extended to June 13, the last day for payment of fees.

### Autumn Quarter 1969

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 1</td>
<td>Last day for filing complete undergraduate applications for admission (Fri.)</td>
</tr>
<tr>
<td>September 1</td>
<td>Legal Holiday—Labor Day—No classes—Offices closed (Mon.)</td>
</tr>
<tr>
<td>September 2</td>
<td>Last day for filing complete Graduate School applications for admission (Tues.)</td>
</tr>
<tr>
<td>September 22</td>
<td>Last day for filing schedule cards (Mon.)*</td>
</tr>
<tr>
<td>September 26</td>
<td>Last day for payment of fees (Fri.)</td>
</tr>
<tr>
<td>September 29-30</td>
<td>Welcome Program for all new students (Mon. and Tues.)</td>
</tr>
<tr>
<td>October 1</td>
<td>Classes begin, 8:00 a.m. (Wed.)</td>
</tr>
<tr>
<td>October 28</td>
<td>Last day for withdrawal from the University with any refund of fees (Tues.)</td>
</tr>
<tr>
<td>November 3-4</td>
<td>Students enrolled Autumn Quarter may obtain Winter Quarter schedule cards in college offices (A-K on Mon. and L-Z on Tues.)</td>
</tr>
<tr>
<td>November 5</td>
<td>First day Winter Quarter schedule cards may be filed in college offices (Wed.)</td>
</tr>
<tr>
<td>November 11</td>
<td>Legal Holiday—Veterans' Day—Classes as usual—Offices open (Tues.)</td>
</tr>
<tr>
<td>November 15</td>
<td>Legal Holiday—Veterans' Day—Classes as usual—Offices open (Tues.)</td>
</tr>
<tr>
<td>November 27</td>
<td>Legal Holiday—Thanksgiving—No classes—Offices closed (Thurs.)</td>
</tr>
<tr>
<td>November 28-29</td>
<td>Student vacation—No classes—Offices open (Fri. and Sat.)</td>
</tr>
<tr>
<td>December 12</td>
<td>Last day of regularly scheduled classes (Fri.)</td>
</tr>
<tr>
<td>December 15-19</td>
<td>Final Examinations (Mon. through Fri.)</td>
</tr>
<tr>
<td>December 20</td>
<td>Autumn Convocation (Commencement), 9:30 a.m., St. John Arena (Sat.)</td>
</tr>
<tr>
<td>December 20</td>
<td>Autumn Quarter ends, 12:00 Midnight (Sat.)</td>
</tr>
<tr>
<td>December 25</td>
<td>Legal Holiday—Christmas—Offices closed (Thurs.)</td>
</tr>
</tbody>
</table>

* Except newly admitted Graduate School students. The final date for these students will be extended to September 26, the last day for payment of fees.

### Winter Quarter 1970

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 14</td>
<td>Last day for filing complete undergraduate applications for admission (Fri.)</td>
</tr>
<tr>
<td>December 1</td>
<td>Last day for filing complete Graduate School applications for admission (Mon.)</td>
</tr>
<tr>
<td>December 22</td>
<td>Last day for filing schedule cards (Mon.)*</td>
</tr>
<tr>
<td>January 1</td>
<td>Legal Holiday—New Year's Day—Offices closed (Thurs.)</td>
</tr>
<tr>
<td>January 2</td>
<td>Last day for payment of fees (Fri.)</td>
</tr>
<tr>
<td>January 5</td>
<td>Welcome Program for all new students (Mon.)</td>
</tr>
<tr>
<td>January 6</td>
<td>Classes begin, 8:00 a.m. (Tues.)</td>
</tr>
<tr>
<td>February 2</td>
<td>Last day for withdrawal from the University with any refund of fees (Mon.)</td>
</tr>
<tr>
<td>February 2-3</td>
<td>Students enrolled Winter Quarter may obtain Spring Quarter schedule cards in college offices (A-K on Mon. and L-Z on Tues.)</td>
</tr>
</tbody>
</table>
February 4  First day Spring Quarter schedule cards may be filed in college offices (Wed.)
February 12  Legal Holiday—Lincoln's Birthday—Classes as usual—Offices open (Thurs.)
February 14  Last day for students enrolled Winter Quarter to file Spring Quarter schedule cards (Sat. Noon)
February 23  Legal Holiday—Washington's Birthday celebrated—Classes as usual—Offices open (Mon.)
March 13  Last day of regularly scheduled classes (Fri.)
March 16-20  Final Examinations (Mon. through Fri.)
March 19  Winter Convocation (Commencement), 9:30 a.m., St. John Arena (Thurs.)
March 20  Winter Quarter ends, 12:00 Midnight (Fri.)
* Except newly admitted Graduate School students. The final date for these students will be extended to January 2, the last day for payment of fees.

Spring Quarter 1970

February 16  Last day for filing complete undergraduate applications for admission (Mon.)
March 2  Last day for filing complete Graduate School applications for admission (Mon.)
March 20  Last day for filing schedule cards (Fri.)*
March 27  Last day for payment of fees (Fri.)
March 30  Welcome Program for all new students (Mon.)
March 31  Classes begin, 8:00 a.m. (Tues.)
April 27  Last day for withdrawal from the University with any refund of fees (Mon.)
May 1  Students enrolled Spring Quarter may obtain Summer Quarter schedule cards in college offices (Fri.)
May 4  First day Summer Quarter schedule cards may be filed in college offices (Mon.)
May 7  Free Day—No undergraduate classes after 10:00 a.m. (including evening classes)—Offices open (Thurs.)
May 16  Last day for students enrolled Spring Quarter to file Summer Quarter schedule cards (Sat. Noon)
May 20  Legal Holiday—Memorial Day—No classes—Offices closed (Sat.)
June 5  Last day of regularly scheduled classes (Fri.)
June 8-12  Final Examinations (Mon. through Fri.)
June 13  Spring Convocation (Commencement), 9:00 a.m., Ohio Stadium (Sat.)
June 13  Spring Quarter ends, 12:00 Midnight (Sat.)
* Except newly admitted Graduate School students. The final date for these students will be extended to March 27, the last day for payment of fees.

Summer Quarter 1970

May 1  Last day for filing complete undergraduate applications for admission (Fri.)
June 1  Last day for filing complete Graduate School applications for admission (Mon.)
June 19  Last day for filing schedule cards (Fri.)*
June 19  Last day for payment of First Term and Quarter fees (Fri.)
June 22  Welcome Program for all new students (Mon.)
June 23  Classes begin, 8:00 a.m. (Tues.)
July 4  Legal Holiday—Independence Day—No classes—Offices closed (Sat.)
July 6  Last day for withdrawal from the University for the First Term with any refund of fees (Mon.)
July 20  Last day for withdrawal from the University for the Quarter with any refund of fees (Quarter students) (Mon.)
July 24  Last day for payment of Second Term fees (Fri.)
July 27-28  Final Examinations—First Term (at regular class hours) (Mon. and Tues.)
July 28  First Term ends, 12:00 Midnight (Tues.)
July 29  Second Term begins, 8:00 a.m. (Wed)
July 31  First day Autumn Quarter schedule cards are available (Fri.)
August 3  First day for filing Autumn Quarter schedule cards in college offices (Mon.)
August 11  Last day for withdrawal from the University for the Second Term with any refund of fees (Tues.)
August 31  Last day for students enrolled Summer or Spring Quarter to file Autumn Quarter schedule cards (Mon.)
August 31- September 1  Final Examinations—Second Term (at regular class hours) (Mon. and Tues.)
September 1  Last day of regularly scheduled classes (Tues.)
September 2-4  Final Examinations for the Quarter (Wed. through Fri.)
September 5  Summer Convocation (Commencement), 9:00 a.m., St. John Arena (Sat.)
September 5  Summer Quarter ends, 12:00 Midnight (Sat.)
September 7  Legal Holiday—Labor Day—No classes—Offices closed (Mon.)
* Except newly admitted Graduate School students. The final date for these students will be extended to June 19, the last day for payment of fees.
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The Ohio State University

Columbus, Ohio 43210, Telephone 293-3148 (Area Code 614).

Mail for specific members of the Board of Trustees and the Administration should carry the following general address:
The Ohio State University, 190 North Oval Drive, Columbus, Ohio 43210.

Administration offices are open Monday through Friday from 8 to 5 and Saturday from 8 to 12 noon.

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102 Administration Building, 190 North Oval Drive
  Application Requests, Telephone 293-8412
  Undergraduate Admissions, Telephone 293-1431
  Graduate Admissions, Telephone 293-1531
  Professional Admissions, Telephone 293-1321

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200 Administration Building, 190 North Oval Drive, Telephone 293-2812

Office of Continuing Education
12 Brown Hall, 190 West 17th Avenue, Telephone 293-4209

Office of the Dean of the Graduate School
137 Graduate School Building, 164 West 19th Avenue, Telephone 293-6031

Office of the Vice President for Student Affairs
201 Administration Building, 190 North Oval Drive, Telephone 293-6344

Office of the Registrar
203 Administration Building, 190 North Oval Drive, Telephone 293-7941

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200 Student Services Building, 154 West 12th Avenue, Telephone 293-6916
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The Ohio State University will celebrate its centennial year in 1970—one hundred years of teaching, research, and service.