

ALFRED  
UNIVERSITY  
PUBLICATION

STATE UNIVERSITY OF NEW YORK  
College of Ceramics  
at  
Alfred University

CATALOG NUMBER 1965-1966

ALFRED UNIVERSITY PUBLICATION CATALOG 1965-1966

STATE UNIVERSITY OF NEW YORK COLLEGE OF CERAMICS



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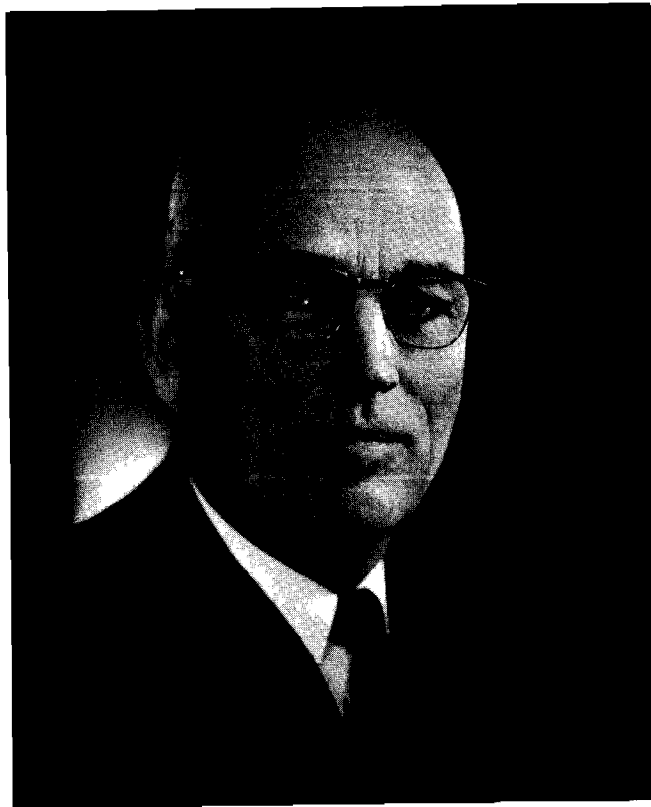
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The choice of a college or university is one of life's most important decisions. It should be based upon a careful consideration of one's own interests and abilities and how well a particular institution can assist in the development of personal goals.

This catalog has been prepared for the purpose of introducing prospective students and their parents to State University of New York College of Ceramics at Alfred University. Through words and pictures we have tried to present the work of the college with emphasis upon its educational philosophy and its curricular offerings.

The College of Ceramics was established in 1900 and has been a recognized leader in ceramics education for more than a half century. It offers exceptional opportunities to young men and women in engineering, science, and art, within the framework of a privately endowed university.

Alfred University, of which the College of Ceramics is an integral part, is a student-centered institution. Its size makes possible a close and friendly relationship between faculty and students. This relationship and a well-developed plan of student participation in university affairs are distinctive features of life on the Alfred campus.

We believe that the College of Ceramics has much to offer its students. If, after reading this catalog, you are interested in learning more, we shall be delighted to have you visit the campus and talk with us about your college plans.

## THE COLLEGE



The College of Ceramics, a unit of State University of New York and an integral part of Alfred University, is a unique institution. Its uniqueness lies in its objectives, its organization, and, more particularly, in the breadth of its offerings and the depth of its treatment of subject matter.

Established in 1900 for the purpose of advancing the art and science of ceramics, the College has maintained leadership in the field of ceramic education since that time. Leadership has been maintained through the teaching and scholarly activities of its faculty, through an awareness of developments taking place in ceramics and in ceramic education, and through continuous development of its physical plant as well as of its teaching-research equipment.

The College has, since its beginning, offered programs leading to the Bachelor's degree in Ceramic Engineering, Ceramic Science, and Ceramic Art. The program leading to the Bachelor of Science degree in Glass Science was initiated in 1932.

The first Master's degree in Design was conferred in 1932; the first Master of Science degree, in 1933; and the first Ph.D. degree, in 1958.

The enrollment has increased from 17 in 1900 to 471 at the beginning of the 1964-65 school year. The present student body is composed of students coming from 53 counties in New York State, from 12 other states, and from 11 foreign countries. While the majority of students are working toward the Bachelor's degree, 56 are graduate students seeking advanced degrees. Of the graduate students, 20 are working toward the Ph.D. degree.

## LOCATION

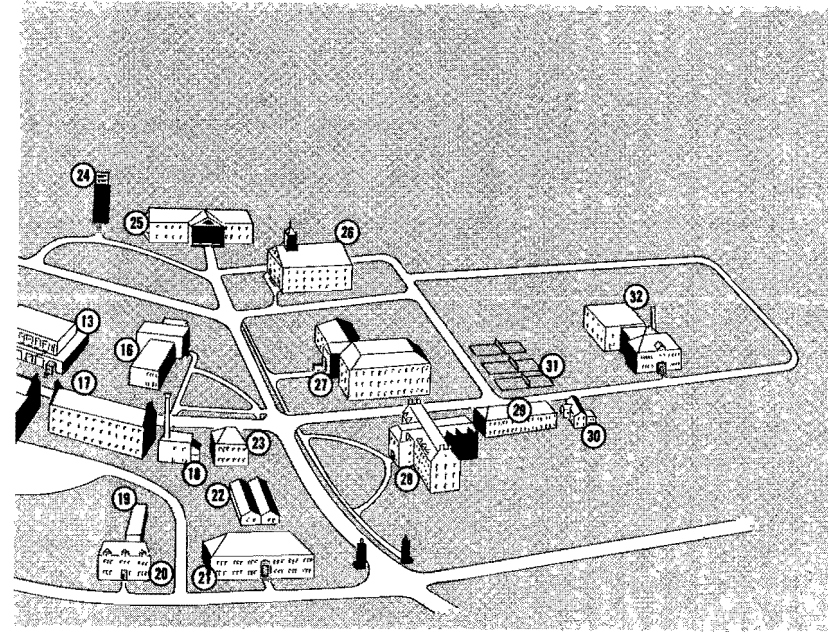
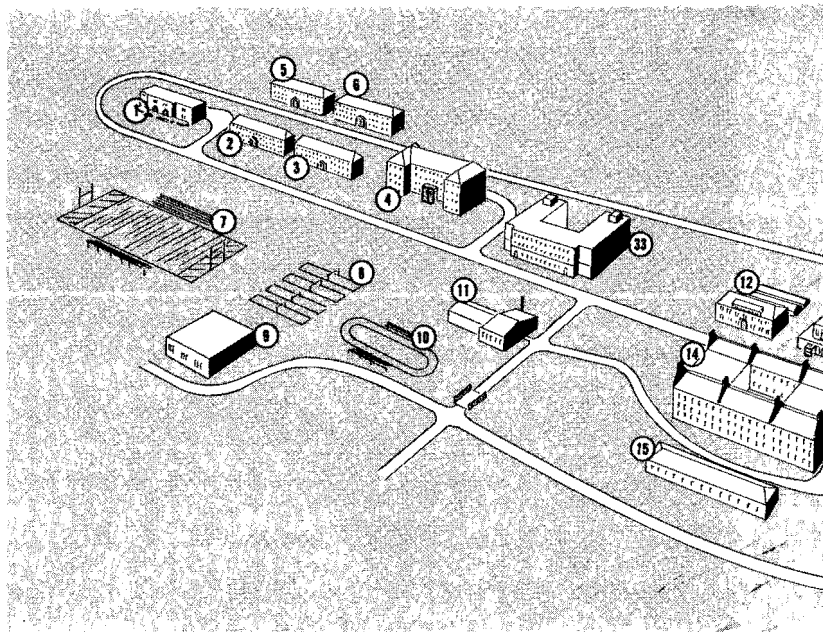
The University is located in the village of Alfred, New York, a pleasant college town lying in the foothills of the Allegheny Mountains, 70 miles south of Rochester and 300 miles west of New York City. Alfred is close to the north-south highway Route 15 and Route 17. It is also served by the Erie-Lackawanna Railroad and Greyhound Bus Lines in nearby Hornell where taxis are available.

## VISITORS

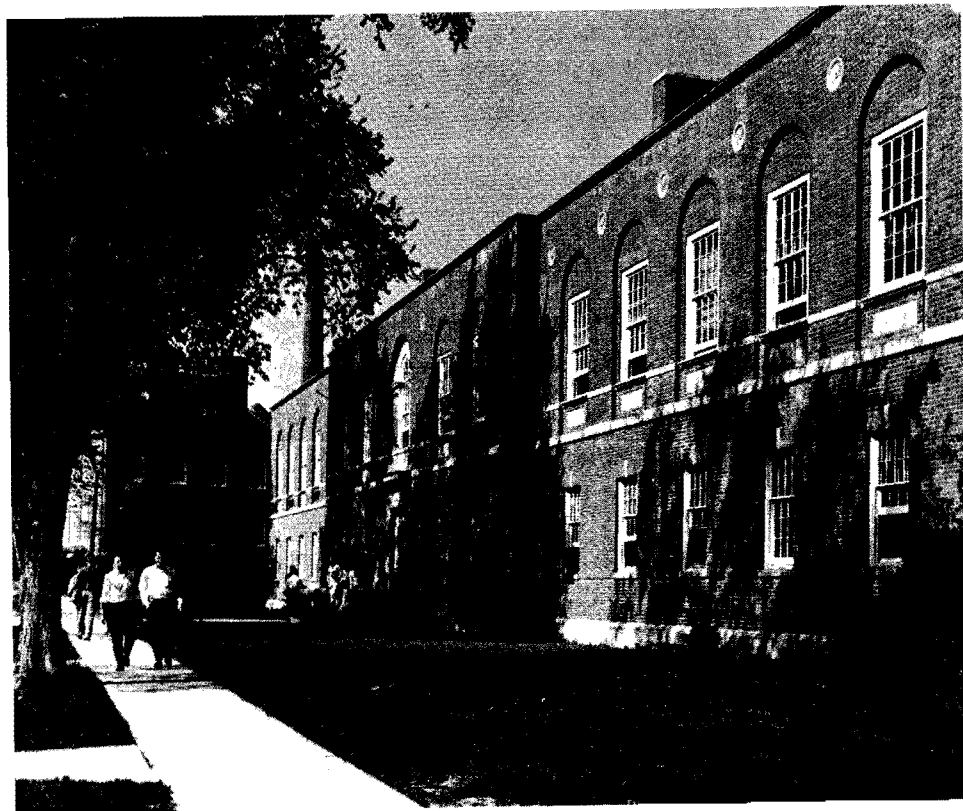
Visitors are welcome at any time. University offices are open regularly Monday through Friday from 8:30 a.m. to 12:00 noon and from 1:00 p.m. to 4:30 p.m., and guides are usually available. Visitors to the Office of Admissions, in Carnegie Hall, are requested to write in advance for appointments.

## KEY TO MAP OF THE CAMPUS

1. Ade Dining Hall 2. Barresi Hall 3. Cannon Hall 4. Bartlett Hall 5. Reimer Hall 6. South Dorm 7. Merrill Field 8. North Tennis Courts 9. Ceramic Pilot Plant 10. Terra Cotta Field 11. Men's Gymnasium 12. Allen Laboratory 13. Myers Hall 14. Binns-Merrill Hall 15. Research Annex 16. Campus Center 17. Physics Hall 18. Heating Plant 19. Maintenance Service 20. Greene Hall 21. Carnegie Hall 22. R.O.T.C. Headquarters 23. Kanakadea Hall 24. Davis Memorial Carillon 25. Howell Hall 26. Alumni Hall 27. Herrick Memorial Library 28. The Brick 29. Kruson Hall 30. Clawson Health Center 31. South Tennis Courts 32. South Hall and Women's Gymnasium 33. Proposed Center for Ceramics Research



## BUILDINGS AND EQUIPMENT



Binns-Merrill Hall, in which most of the work of the College is conducted, is a building of which the College is justly proud. This structure, dedicated in 1953, is rectangular in shape, containing 70,000 square feet of working space especially designed and laid out to serve the particular needs of the College. The building and its equipment represent an outlay of approximately \$2,000,000 and provide the finest and most complete facilities for ceramic education anywhere in the world.

In Binns-Merrill Hall there are a library; laboratories for compounding and testing claywares and glass products; petrography and mineralogy laboratories; chemistry laboratories; lecture rooms; a pottery shop; a wood-working shop; rooms for drafting, drawing, painting and modeling; laboratories for research and development; and a two-story kiln room, 194 feet long.

An annex, which was constructed in 1949, has been equipped to offer a special course in unit operations and to serve as a pilot plant. In this building advanced studies in product development are conducted.

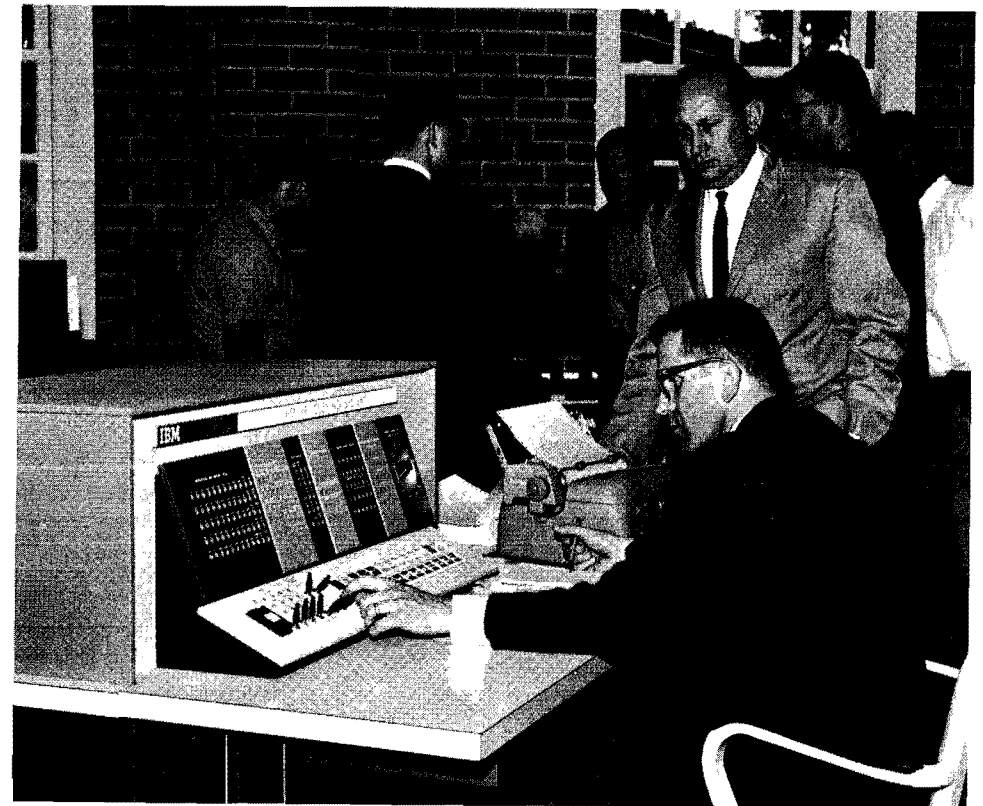
The ceramic laboratories are equipped with apparatus and machinery needed for clay working, glass making, mineral processing, batch mixing, batch preparation, shaping and forming of ware, melting, drying, firing, testing, and mineral analysis. The special laboratories—such as those for chemistry, petrography, spectroscopy, electron microscopy, x-rays, and mass spectrometry—are completely equipped. In addition to the major facilities there are available the many small items of equipment and apparatus essential to special studies and research. A Computing Center was officially opened

on June 21, 1963, and is a significant addition to the College's teaching and research facilities. The Center, the heart of which is an IBM 1620 computer, provides facilities for computing instruction in conjunction with the engineering, scientific, and technological courses offered by the college as well as a means for solving complicated problems encountered in fundamental research.

In the corridors of Binns-Merrill Hall are various exhibits and displays which indicate the products and the processes as well as the arts and sciences with which the College is concerned. Notable among the exhibits are the Binns Pottery Collection, the Carder Glass Collection, the Silverman Glass Collection, the Locke Glass Collection and the Wesp Collection.

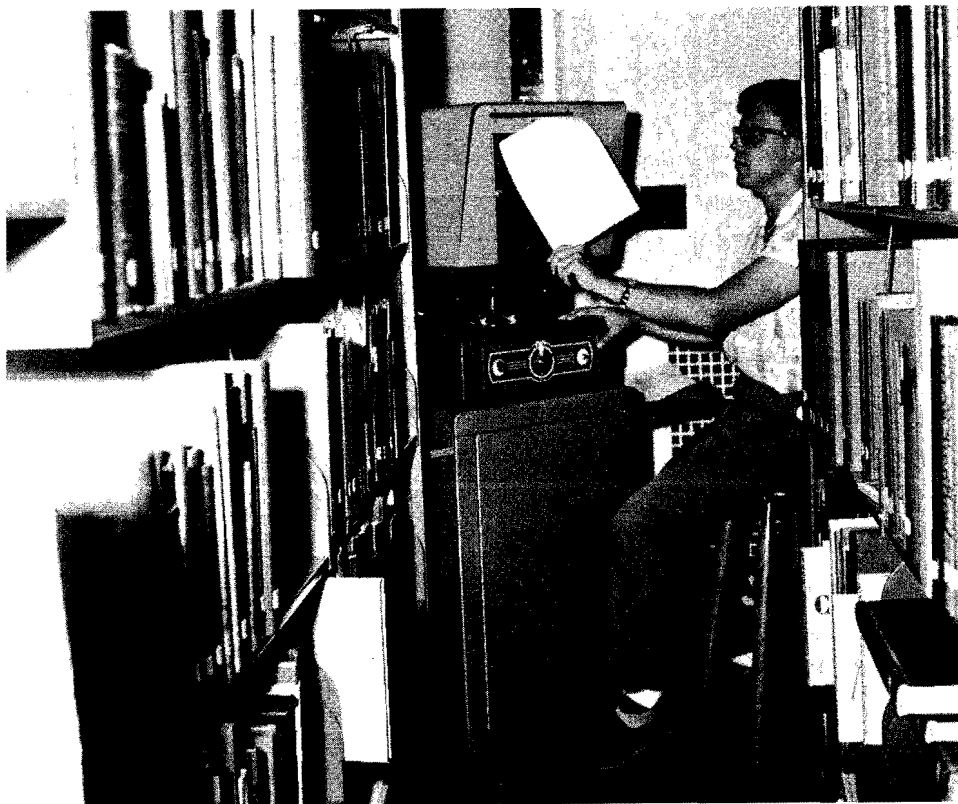
Another building occupied in 1963 provides an air conditioned laboratory approximately 40 by 80 feet with facilities for graduate student research. In the basement of this building there are a glass-working shop and a small machine shop for use by graduate students.

Some of the research which is under the direction of the College staff is housed in buildings owned by Alfred University.





## THE LIBRARIES



A highly important facility of The College is the ceramic reference library. Under the guidance of trained librarians, the students find here a wealth of published material relating to all phases of ceramic engineering, ceramic science, art, and design, as well as to the sciences. The library is open seven days and six evenings each week.

The number of bound volumes of art and technical books approximates 22,000. In addition, the library has many unbound bulletins, reprints, pamphlets, and student theses. More than 700 periodicals are currently received on subscription.

The Herrick Memorial Library, containing over 108,000 volumes, is also available to ceramic students. This collection supplements effectively the ceramic library, particularly in humanistic-social subjects.

## SPECIAL FEATURES OF A CERAMIC EDUCATION AT ALFRED UNIVERSITY

The uniqueness of the College and the importance of its programs have led to scheduled visits of dignitaries. These visitors—representing industry, educational institutions, and government agencies—come from all parts of the globe to meet with faculty, research staff, and students.

Through special organized trips, students are provided with an exceptional opportunity to visit manufacturing plants, research laboratories, educational institutions, libraries, and museums related to their course work.

The College of Ceramics has an active placement program. Company representatives visit the campus to interview students. In addition, career guidance is available through major department heads, personal contact with visitors, and plant tours.

## STATE UNIVERSITY OF NEW YORK

The State University of New York was established by the State Legislature in 1948. It comprises 58 units: four university centers, two medical centers, ten colleges of arts and science, eight specialized colleges, six two-year agricultural and technical colleges, and 28 locally-sponsored two-year community colleges. Although separated geographically, all are united in the purpose to improve and extend opportunities for youth to continue their education beyond high school.

State University offers programs in the liberal arts and sciences; engineering; home economics; industrial and labor relations; veterinary medicine; ceramics; agriculture; forestry; maritime service; teacher education; law; pharmacy; medicine; dentistry; social work; business administration; public administration; and librarianship. The University's two-year programs also include liberal arts study and a wide variety of technical courses in such areas as agriculture, business and the industrial and medical technologies.

Advanced graduate study at the doctoral level is offered by the University at 13 of its units, including the university centers and the Graduate School of Public Affairs. While graduate work can be pursued at 24 of the colleges, the programs at the majority of these units are now limited to the master's level. The University, however, is continuing to broaden and expand overall opportunities for advanced degree study.

Governed by a Board of Trustees appointed by the Governor, State University of New York comprises all State-supported institutions of higher education, with the exception of the four-year colleges of City University of New York. Each college and center of State University is locally administered. Students should write directly to the institution in which they are interested for admission forms.

The State University motto is: "Let Each Become All He Is Capable of Being."

## CERAMICS

"Ceramics" is derived from the Greek word "Keramos," which means "fired earth." Since the beginning of recorded time, man has made and used ceramic products. He began by utilizing naturally occurring clays and has come to use refined clays and every non-metallic inorganic mineral found in the earth's crust.

Ceramics involves the products of past civilizations, the products of the present age of science, and products for the space age that lies ahead. Ceramics is concerned with science (the searching out of new concepts), with technology (the application of science to new products), with engineering (the manufacture and utilization of products for the benefit and advancement of man), and with design (the culture of man). Its products, because they are practically indestructible, are and will continue to be the markers of man's accomplishments through the ages.

Research is an important element of each of the several aspects of ceramics. Through his research efforts, man is obtaining new and refined products with which to make life more pleasant and scientifically important products with which to advance the boundaries of knowledge.

## A PROFESSIONAL EDUCATION IN CERAMICS

The age in which we live is exciting and challenging to the imagination. Although referred to as the atomic or space age, it is also considered to be the age of ceramics. Present and future developments will depend upon the progress in the ceramic field. Ceramic products are the most heat resistant, most durable, and hardest products available to man. Research in these materials has resulted in the development of products having unique electrical, light transmitting, and corrosion resistant properties. An education in ceramics prepares a person for a career in a field that presents many challenges and for a life of rewarding experiences. In pursuing an education in ceramics, a student will be involved with scientifically oriented studies as in engineering or science or in aesthetically oriented studies as in ceramic art.

The undergraduate programs offered in the College of Ceramics, though varying in objectives and in detail, are structured to provide a strong fundamental base and a broad education as well as a concentration in ceramics. Because it is recognized that no entering student is aware of his potential or of the part he will be expected to play in life, the College insists upon a strong background in fundamental subject matter and in the humanities. The College hopes that when a student graduates he will not only be a capable ceramist, but also a person who can and will assume responsibilities in his community.

Many students will end their formal education upon receiving the baccalaureate degree, but an ever increasing number will be going on to graduate school. The programs offered by the College will prepare the student to reach the goals he will set for himself.

The College offers four courses leading to the Bachelor's degree:

**CERAMIC  
ENGINEERING**

This program, which is accredited by the Engineers' Council for Professional Development, is directed specifically toward preparation for the profession of Ceramic Engineer. A number of graduates of the program go on to graduate school.

**CERAMIC  
SCIENCE**

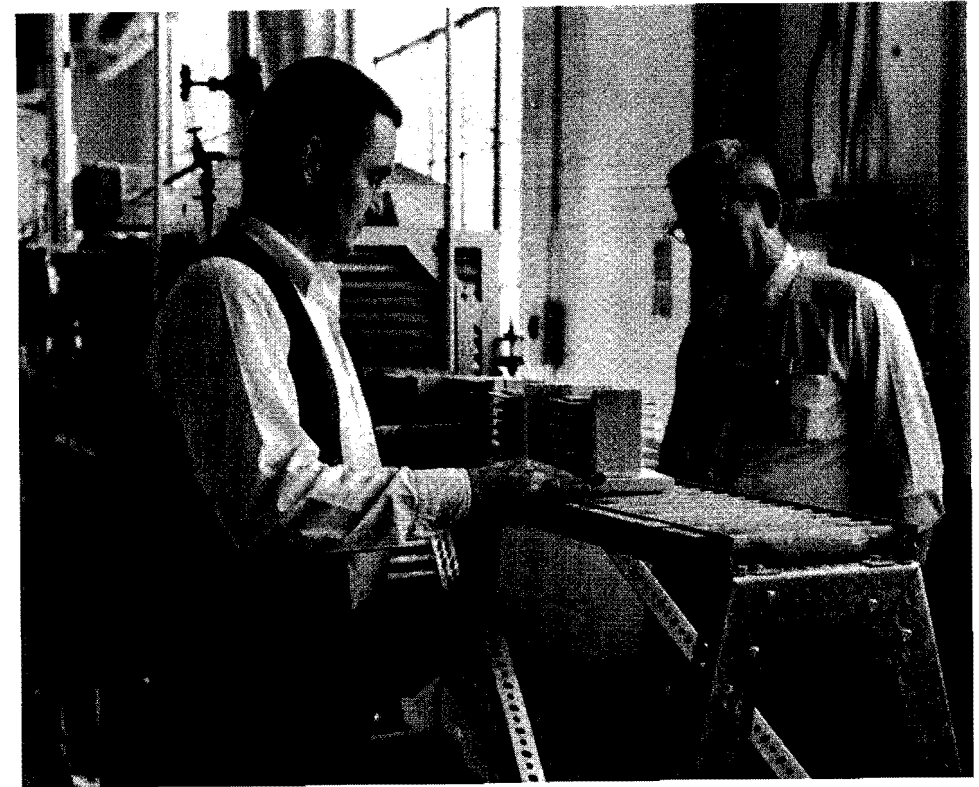
This program is available to those students who are definitely planning to study at the graduate level. A number of the graduates of this program, however, do go directly into industry.

**GLASS  
SCIENCE**

This program is available for those students who are more particularly interested in learning much about glass and who have a desire to enter this field of study. Although most of the graduates of this program enter the glass industry, a number do enter graduate school.

**CERAMIC  
ART**

This program, which is accredited by the National Association of Schools of Art, has been developed for those students who wish to work toward the production of beautiful and useful ceramics. It emphasizes the creative processes and is separate as well as distinct from the other programs. Graduates enter industry, set up shops of their own, become teachers, or go on to graduate school.



## THE CERAMIC ENGINEER / THE CERAMIC SCIENTIST / THE GLASS SCIENTIST / THE CERAMIC DESIGNER

The Ceramist of the past concerned himself with clays, feldspar, quartz, limestone, soda ash, and a limited number of other minerals which were used in the manufacture of clay products and glass.

From his knowledge of these materials—how they could be blended—and how they reacted during heating—he became a specialist in the manufacture of building brick, sewer pipe, terra cotta, pottery, window and art glass, floor and wall tile, sanitary ware, and fireclay refractories.

The Ceramist of today concerns himself with every non-metallic, inorganic mineral available and with the development of new and better

**a. Portland Cement for:** faster and better road building, high temperature applications, use in contact with chemically active materials, better concrete structures.

**b. Refractories to:** withstand ever-increasing temperatures, overcome reaction with melts of new metals and alloys, resist more effectively the corrosive action of molten glass, withstand severe heat shock, help make better jet engines and rockets, stand up under heavy loads at high temperatures, be suitable for use in atomic energy applications.

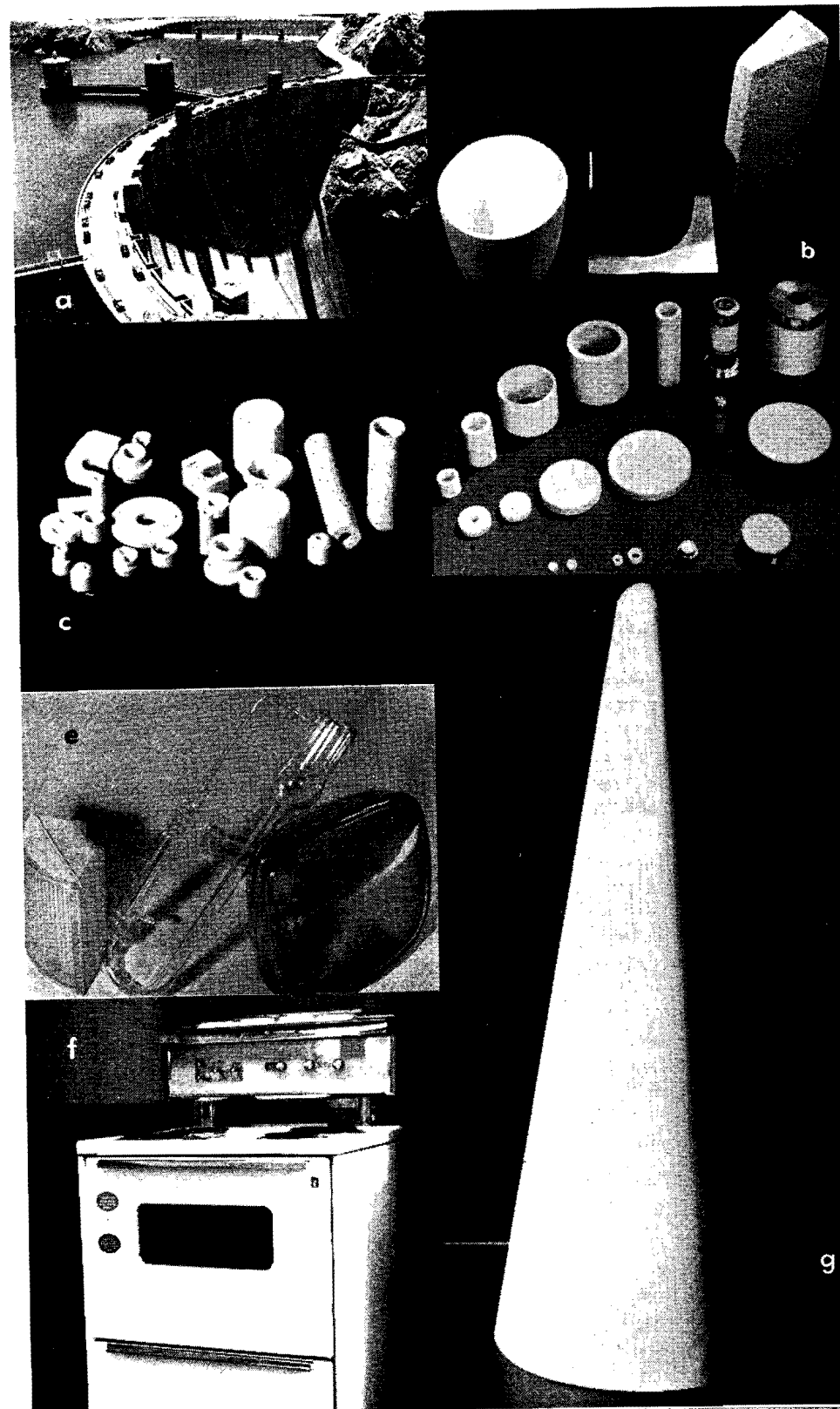
**c. Specific Products for:** textile, metal polishing, electronics, oil, printing, atomic energy applications.

**d. Dielectrics for:** radar equipment, radio equipment, calculating machines, television equipment, ultra-high frequency application, electronic devices of all kinds.

**e. Glasses for:** new optical systems, reflecting signs and markers, television applications, structural uses, electrical light fixtures, heating elements, utensils.

**f. Enamels for:** use in jet engines, chemical engineering equipment, new household appliances, new jewelry applications, architectural applications.

**g. Ceramics for:** space vehicles.



## GRADUATE STUDY

As knowledge is gained and an awareness of the immensity of man's knowledge develops, some students, regardless of the program they are following, are determined to gain more than can be accomplished during the baccalaureate years. Realizing this, the College has developed each of its programs in such a manner as to permit those students who show academic promise to continue their studies at the graduate level at other colleges or at the College of Ceramics.

## UNDERGRADUATE AND GRADUATE RESEARCH

Studies at the College are carried on in an atmosphere of research, and each undergraduate is required to conduct his own research project. As will be appreciated, this excursion into research cannot be one of great depth. However, it suffices to give the student an insight into the ramifications of original research as well as of the rewards of such efforts.

Undergraduate students who desire more than the required experience in research have unsurpassed opportunities to gain this experience. Faculty members and graduate students, all of whom are involved in some research, are anxious to have the eager, capable students consult with them, study with them, and, on many occasions, work with them.

Members of the Teaching Staff of the College work closely and cooperatively with undergraduate students, graduate students, and with other members of the faculty. They carry on original research, each in the area of his own specialization, supervise undergraduate and research theses, and direct sponsored projects.

Research is sponsored by government agencies, by industrial concerns, by organizations, by foundations, by the State of New York, and by the College. Monies received through these sponsorships go to support the educational programs of students. Many undergraduate and graduate students work on sponsored projects, gaining experience as well as financial assistance.

Among the government agencies sponsoring research are the National Aeronautic and Space Agency, National Institute of Health, Department of Health, Education, and Welfare, the Office of Naval Research, the Office of Ordnance Research—U.S. Navy, and the National Science Foundation. Programs may be of a fundamental nature only, but may also have implications for the utilization of new ceramic materials in advanced space and weapons systems.

Among the subjects under study are special properties of semi-conductors, the role of defect structure in catalysis, the correlation between the physical and chemical properties of oxide surfaces, the principles of fuel-cell operation, the dielectric and mechanical losses in solids, the elastic and anelastic properties of polycrystalline ceramics, and the effect of grain boundaries on the thermal conductivity of ceramic materials.

Research being conducted under sponsorship of private industry, organizations, and foundations includes studies of defect structure in relationship to the chemical, physical and mechanical properties of ionic solids, the properties of glass-polishing agents, infrared transmitting ceramics, surface properties of silica and alumina co-oxides, high temperature friction materials, the effect of moisture absorption on moisture expansion, lead glass systems, strength of glass, and diffusion of oxygen into glass.

Research sponsored by the State of New York involves studies related to the utilization of New York State minerals, New York State products, new ceramic products, new industries, new manufacturing processes—as well as studies relative to improving teaching and research techniques. Among studies under way are the limestones of New York State, the economical utilization of clays, the development of lightweight material, the development of lightweight products, the differential thermal analysis of minerals, solid state physics, surface chemistry of ceramic materials, and the properties of single crystals.

The Ceramic College is fortunate in having the close cooperation of the Ceramic Association of New York. The Research Committee of this organization acts in an advisory capacity to members of the faculty, and their recommendations contribute greatly to the organization and planning of the research program. Through the Ceramic Association of New York, staff members are able to obtain the advice of the leading ceramic industrialists of New York as well as the active support of their companies.

The demand for persons trained in research methods and the research attitude as well as in a forward-looking, developmental atmosphere is increasing. The College of Ceramics plans on continuing to contribute materially to this extremely important phase of education.

Support of the research program by the Federal and State governments and by industry makes possible the granting of support to selected undergraduate and graduate students in their thesis work. Some of these fellowships are held by seniors and graduate students on a part-time basis, whereas others are held by full-time research associates. Stipends are commensurate with the experience and ability of the holders and with the time that is devoted to the project under study. Full-time research associates are permitted to take a maximum of twelve semester hours of graduate course work per year.

## DEGREES



Graduation from the College and the awarding of any degree depend upon the successful and satisfactory completion of the prescribed course of study contained in the program elected. No substitution for prescribed courses is permitted, but the student is permitted, through elective courses, to study a limited number of subjects which permit him to satisfy his individual desires. The University reserves the right to withhold a diploma for poor scholarship or for other reasons.

### BACHELOR'S DEGREES

#### *Bachelor of Science*

The degree of Bachelor of Science (B.S.) is conferred on those students who complete, with a cumulative grade point index of 2.00, the course of study described and given in detail on pages of the catalog under *Ceramic Engineering*, *Ceramic Science*, and *Glass Science*. The name of the curriculum followed is stated on the diploma.

#### *Bachelor of Fine Arts*

The degree of Bachelor of Fine Arts (B.F.A.) is conferred on those students who satisfactorily complete, with a cumulative grade point index of 2.00, the prescribed course of study described and given in detail on pages of this catalog, under *Ceramic Art*.

## ADVANCED DEGREES

### ADMISSION

To be eligible for admission to the Graduate School, an applicant must have received the baccalaureate degree from an accredited collegiate institution, and his undergraduate record must indicate clearly that he is able to perform creditably at the graduate level. Applicants for admission should direct their correspondence to the Dean of the Graduate School, who will coordinate the processing of the applications. The Admissions Committees reserve the right to admit or reject applicants to the various graduate programs.

Of the undergraduate students at Alfred University, only seniors in good academic standing may be permitted to enroll in graduate (500 or over) courses. For each enrollment, the permission of the instructor is required. Seniors who have been admitted to the Alfred University Graduate School may, with permission of the Dean, take certain courses for graduate credit during the last semester of the undergraduate program.

### MASTER OF SCIENCE DEGREE

The Master of Science degree may be earned in the fields of Ceramic Engineering, Ceramic Science and Glass Science in one or two years by well-qualified graduates of the College of Ceramics or the appropriate programs at other accredited institutions. Where the undergraduate program differs significantly from that of the College of Ceramics, students will be required to bring their backgrounds up to that level, and to demonstrate that they have done so. See also the catalog of The Graduate School.

Generally, the Master of Science degree is evidence that the holder possesses maturity and a grasp of his major subject well beyond that of one having the bachelor's degree; that he is able not only to work and study independently, but also to understand and apply the literature of his field.

The requirements for the degree are:

1. At least one year of residence (work must be completed within a period of three years unless special permission is granted.)
2. Thirty-six credit hours of study including thesis at an average index of 3.00. The thesis may count for not more than 18, nor fewer than 12 of the required hours.
3. The submission of a completed thesis based on original experimental work, on an approved subject, and so written as to be suitable for publication.
4. Successful performance during a two-hour oral examination in the candidate's major field.

The Faculty of the College of Ceramics is presently formulating an alternative program leading to the Master of Science degree. If this alternate program is operative by September, 1965, students will have the option of choosing one or the other of the two programs. Detailed definitions, instructions, and descriptions of requirements are delineated in the Manual for Master of Science students which is available to entering graduate students.

### MASTER OF FINE ARTS DEGREE

Objectives of the program leading to the Master of Fine Arts degree are to help the mature student to build the knowledge, experience, and skills of the ceramic medium that best support works of the imagination; to prepare him for a creative way of life in the ceramic arts or for a professional career in design; or for the college level responsibilities of artist-teacher in the ceramic disciplines.

To be eligible for admission a student must have been graduated from an accredited institution and received the Bachelor of Fine Arts degree or the Bachelor of Arts degree, with the equivalent of 75 credit hours of professional art training. A better than average undergraduate record must be presented along with appropriate recommendations. The submission of a portfolio and slides of undergraduate work as well as an on-campus interview are necessary before admission to graduate study may be granted (exceptions as to the interview may be made where travel distance is great).

A minimum of two years in residence and 64 credit hours earned after formal admittance to graduate study are required for the degree. Course work for the first year centers on a theoretical and laboratory study of ceramic raw materials and processes—correlated with creative studies in pottery, sculpture, painting, visual design, and structural design—and with art theory and seminar. The second graduate year is one of independent study devoted to the development of a project and thesis.

Application to degree candidacy may be made to the Dean of the Graduate School after three semesters in residence and

1. the satisfactory completion of 48 credit hours of acceptable graduate courses (or three-quarters of the total requirement).
2. satisfactory performance on the comprehensive examination.
3. approval of thesis outline by the Graduate Committee on the Master of Fine Arts degree.
4. evidence of an ability to complete the graduate project in one semester.
5. unanimous approval of the Graduate Committee.

Industrial fellowships involving a six months' internship in the design laboratory of University-approved industrial firms, along with graduate assistantships, are available after a minimum of one semester or one six-week summer session in residence. The Alfred summer session is strongly recommended as useful orientation to graduate study. At the discretion of the Graduate Committee, credit earned during this session may or may not be applied toward the Master of Fine Arts degree.



## DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy degree is offered in the field of ceramic science.

The normal residence requirement is three years, but in no instance will it be fewer than two years. As with the Master of Science degree, due consideration will be given to graduate work completed at another institution, but transfer credit cannot be expected for courses in which a grade lower than "B" was obtained.

Ninety hours of credits beyond the requirements for the Bachelor of Science degree must be earned. Of these, a minimum of 45 credit hours must be in regular course work; the remainder may be earned as thesis credit hours.

Three hours each of advanced calculus and differential equations are required as undergraduate courses for admission to the program, and, if lacking, should be made up as quickly as possible. Graduate credit is not given for these courses.

Eighteen hours of credit in specified courses in chemistry, physics, mathematics, and ceramics are required as well as attendance at graduate seminars. Other courses may be selected as follows: at least 15 hours in courses carrying a 500 number, and the remainder from 500 and 400 courses. A listing of the courses will be found in the catalog. Students on this program are expected to maintain a minimum index of 3.00 in course work, and not more than 9 hours at "C" will be accepted.

Before being admitted to candidacy a student must have

1. made up all deficiencies stated at the time of admission.
2. demonstrated a reading knowledge of at least two foreign languages.
3. passed a comprehensive examination.
4. received approval for his thesis outline.

The Ph.D. degree will be conferred only on those who have demonstrated competence in the field of ceramics, met the foregoing general requirements, and submitted as well as orally defended a thesis.

More detailed instructions and descriptions of requirements are available to students when they begin residence, in the form of a manual for Doctoral Students.



## ADMISSIONS FINANCIAL AID, EXPENSES



The Admissions Staff is concerned with the pattern of life which each individual applicant is developing for himself. The admissions officers interpret the University to the prospective student; the student must then decide for himself whether Alfred's program for learning and living should become a part of his life.

Although it may seem that all institutions are seeking the same persons, this is not correct. Each institution is seeking those young men and women who are prepared for and will take advantage of the particular educational opportunities it has to offer. Because of individuality in programming and educational objectives, each institution has its specific requirements. These requirements will vary with programs to be followed as well as with colleges to be attended.

## ADMISSION TO THE UNDERGRADUATE DEGREE PROGRAMS

### POLICY

Admission to Alfred University is selective, and the number of entering freshmen is limited to the available accommodations. The University desires students from diverse backgrounds and geographic areas.

The Admissions Committee bases its selection on the following criteria: character, academic background and potential, extra-curricular interests, motivation for a college education, and the desire of the applicant to attend Alfred University, a residential college.

Special consideration will be given direct relatives of Alfred University alumni.

## REQUIREMENTS FOR ADMISSION

A minimum of 16 units of academic work is recommended for admission to Alfred University. Engineering and technology candidates should have completed courses in chemistry, physics, and mathematics through second year algebra and trigonometry. Students applying for admission to the engineering or technology program in the College of Ceramics are permitted to have 16 units without a foreign language if high achievement is attained from a college preparatory program including four units each of English, laboratory science, mathematics, and social studies.

Ceramic Art candidates may include courses completed in art, design, and ceramics as acceptable substitutes in meeting the minimum standards.

All candidates should send a portfolio of representative work directly to the Chairman of the Department of Ceramic Art, College of Ceramics, Alfred University.

## PROCEDURE

1. APPLICATION—The Director of Admissions will supply prospective students with the necessary publications and application forms. No application will be reviewed by the Admissions Committee until it is complete.

The completed application form must be accompanied by a non-refundable \$10.00 application fee.

Form 2 is the official record of the candidate's secondary school career and should be completed and returned to the Admissions Office by the candidate's principal or guidance counselor at the time the application is filed. The 8th semester grade report is necessary before final acceptance is granted.

2. THE INTERVIEW—It is assumed that an on-campus interview will be part of the admissions procedure. If an applicant cannot appear for such an interview, he should write to the Director of Admissions. Interested students are welcomed at any time with an appointment made *in advance*. After February 1, interviews are granted after the student has filed credentials. Preferred interview days are Monday, Wednesday, and Friday of each week.

3. ENTRANCE EXAMINATION—Alfred University is a member of the College Entrance Examination Board and uses the Scholastic Aptitude Test (morning program) and the English Achievement Test\* (afternoon program) as the required entrance examinations. *In addition, out-of-state Ceramic Engineering candidates are required to take the Achievement Tests in Intermediate or Advanced Mathematics and Chemistry.*

The Scholastic Aptitude Test is given five times a year, but all candidates for admission are urged to take the required tests on the December or January testing dates.

Registration forms and general information for these tests may be obtained from the secondary school principal or guidance counselor at least one month prior to the testing date.

\* Not the writing sample.

## EARLY DECISION

Alfred University employs an Early Decision Plan which enables the outstanding applicant to complete college plans early in the senior year. Under this plan, the applicant must file his application by November 1, indicating "Early Decision" at the top of the first page. In addition, the academic record (Form 2) must be completed through the junior year and the required College Entrance Examination Board tests taken in March, May, or July prior to the senior year. The secondary school official must certify that only one application is filed. If accepted under this program, the student must submit the advance deposit within ten days of acceptance. As with all regular candidates, this acceptance is contingent upon successful achievement during the senior year. Candidates for Early Decision who are also candidates for financial assistance will be notified of their award at the time of acceptance.

## ACCEPTANCE

1. NOTIFICATION—Committee action, except for early decision, occurs primarily in February, March, and April. *All candidates are accepted for admission on a provisional basis with final acceptance being granted after notification of successful completion of the secondary school experience and the return of the health form sent with the provisional acceptance.*

2. CANDIDATE'S REPLY DATE—Alfred University subscribes to the Candidate's Reply Date of the College Entrance Examination Board for all regularly accepted candidates.

3. ACCEPTANCE DEPOSIT—A \$50.00 deposit is required of all accepted freshman and transfer applicants and is *not refundable* should the candidate withdraw prior to registration. This deposit is payable in accordance with provisions governing the Candidate's Reply Date outlined above. An applicant accepted for admission after May 1 must submit the deposit within two weeks of notification. This deposit reserves a place in the entering class. It is *not* applied to any term bill. The deposit is refunded to the enrolled student, less any unpaid charges, after graduation from the University or following the student's withdrawal if done according to the official prescribed procedure.

4. HOUSING—All freshmen and sophomores live in University dormitories, and meals are served in dormitory dining rooms. The Office of the Dean of Students is responsible for the assignment of rooms to accepted students in August of each year.

5. ORIENTATION AND REGISTRATION—Orientation week at Alfred University is planned to acquaint entering students with faculty, fellow students, the educational program, and the traditions of the University.

## ADVANCED PLACEMENT AND CREDIT BY EXAMINATION

To encourage students with outstanding ability and enterprise, Alfred University has adopted the following policies relative to advanced placement and credit by examination.

Students who have participated in the College Board Placement Program, New York State College Proficiency Examination, or in some equivalent program before entering college may, after admission to the University, present the pertinent records to a review committee consisting of the Dean of the College of Liberal Arts, the Dean of the College of Ceramics, and the Registrar, who will, on the advice of faculty members in the areas most concerned, judge the student's accomplishment. (The Dean of the College of Liberal Arts and the Dean of the College of Ceramics will alternate as chairman of this review committee). If such records have been filed with the Admissions Office, they will normally come to the attention of the committee after a student has been admitted.

#### Committee action may

- (1) grant Alfred University academic credit and recognize the earlier work as satisfying prerequisites when appropriate for advanced courses, or
- (2) allow earlier work to satisfy prerequisites although no credit is granted, or
- (3) deny credit or prerequisite recognition of earlier work.

A student will not be permitted to repeat for credit any work for which the review committee has granted credit.

The review committee will also consider petitions (normally filed with the Registrar) from matriculated students wishing to be examined for credit in undergraduate courses which they have not taken. The review committee, with the advice of the faculty members in the areas most concerned, will decide whether each such request is well substantiated and, if so, will call on the department involved to examine the student by methods satisfactory to the committee.

The following regulations apply to matriculated students seeking the privilege to challenge a course for credit and/or advanced placement:

- (1) All applications for challenge should be made in writing to the Registrar.
- (2) A student may challenge a course only once.
- (3) A student may not challenge a course which he has previously taken—either at Alfred University or elsewhere.
- (4) A student may not challenge a course after he has been officially registered in that course.
- (5) A student may not challenge a course which he has previously audited.
- (6) Normally, a student's privilege to challenge shall fall within the regulations governing a normal study program.
- (7) A student may not challenge any course required for graduation during the last semester in residence.
- (8) A student shall be charged a fee of \$15.00 for each challenge examination.

Credit earned in the program of advanced placement and credit by examination (work of C level or better required) shall be recorded with a grade of P which is not figured in a student's index. No more than 32 credits shall be granted to any student under these procedures. Credit may not be claimed under these procedures for proficiency in studies which are normally part of the high school program.

Although a matriculated student is charged a fee of \$15.00 for each challenge examination taken at Alfred University (see number 7 above), there will be no fees charged by Alfred University for advanced placement examinations taken under other auspices prior to entrance.

#### ADMISSION OF TRANSFER STUDENTS WITH ADVANCED STANDING IN UNDERGRADUATE PROGRAMS

A limited number of students from other approved institutions may transfer to the University, the number depending on space available in the dormitories. No transfer students, except those who have come to the terminal point of their education, i.e. candidates from junior colleges and community colleges, are eligible for financial assistance until they have been enrolled at Alfred University for one academic year. The admission of transfer students is subject to the following regulations:

1. Complete transcripts of all secondary school and college work completed should be forwarded to the Director of Admissions with the application form.
2. The applicant must obtain from the Dean of the college from which he is transferring a letter of honorable dismissal and a statement that the student is eligible to return to the institution from which he is transferring.
3. Credit will be granted for equivalent courses in which the grade of C or higher is obtained.
4. Transfer students are subject to the same standards of selection as entering freshmen. If the appropriate tests of the College Entrance Examination Board have been taken, the scores should be forwarded to the Director of Admissions. If these tests have not been previously taken by the transfer candidate, the applicant must make arrangements to do so before review of the application will be made.
5. All acceptances are contingent upon the successful completion of the student's present course of study.

#### OTHER ADMISSIONS

For Summer School and various special programs which students may attend without becoming candidates for degrees there are no formal admissions procedures though the University will expect and require suitable preparation in each instance. Any student permitted to take work without being a degree candidate is classed as a special student. As such the student cannot assume that he will automatically be entitled to degree candidacy if he continues in his studies.

#### FOREIGN STUDENTS

Alfred University has always welcomed students from other countries and has many nationalities represented in its student body. It is advantageous for foreign students to make application well in advance to allow for evaluation of credentials and travel arrangements.

TUITION, FEES AND EXPENSES\*

| TUITION        | New York Residents | Tuition | Fee   | Total |
|----------------|--------------------|---------|-------|-------|
| Undergraduates | .....              | \$400   | \$130 | \$530 |
| Graduates      | .....              | \$600   | \$ 75 | \$675 |
| Out of State   |                    |         |       |       |
| Undergraduates | .....              | \$600   | \$130 | \$730 |
| Graduates      | .....              | \$600   | \$ 75 | \$675 |

The effect of the new schedule on NEW YORK STATE RESIDENTS will be lessened by Scholar Incentive Program grants and by grants-in-aid provided by the College as follows:

|                            | Income*     | Tuition | Tuition less SIP Grant** and Grants-in-Aid | College Fee | Total |
|----------------------------|-------------|---------|--------------------------------------------|-------------|-------|
| UNDER-GRADUATE INSTRUCTION | † \$ 0-1800 | \$400   | \$ 0                                       | \$130       | \$130 |
|                            | \$1801-7499 | \$400   | \$200                                      | \$130       | \$330 |
|                            | \$7500-plus | \$400   | \$300                                      | \$130       | \$430 |
| GRADUATE INSTRUCTION       | † \$ 0-1800 | \$600   | \$ 0                                       | \$ 75       | \$ 75 |
|                            | \$1801-7499 | \$600   | \$300                                      | \$ 75       | \$375 |
| First Year                 | \$7500-plus | \$600   | \$400                                      | \$ 75       | \$475 |
| GRADUATE INSTRUCTION       | † \$ 0-1800 | \$600   | \$ 0                                       | \$ 75       | \$ 75 |
|                            | \$1801-7499 | \$600   | \$200                                      | \$ 75       | \$275 |
| Subsequent Three Years     | \$7500-plus | \$600   | \$200                                      | \$ 75       | \$275 |

\*Net taxable family income of each student.  
\*\*Scholar Incentive Program.  
†Students in this family taxable income group will receive, in addition to the SIP grant, a grant-in-aid of \$100 each semester from the College of Ceramics.

LEGAL RESIDENCE

To be eligible for resident charges or to receive a Regents scholarship, Regents fellowship, or scholar incentive award, the student must be a legal resident of the State of New York (Foreign visitors holding student visas are not residents).  
In addition, to be eligible to receive a scholar incentive award, the student must not only be a legal resident of New York State, but he must have been such a resident for a period of at least 12 months immediately preceding the beginning of the semester for which he is applying for assistance. A candidate for undergraduate assistance who

is now a resident may also qualify if he was a resident during his last two semesters of high school. Similarly, a candidate for post-graduate assistance who is now a resident may qualify if he was a resident during his last two semesters of undergraduate study and continued such residence until matriculation in a graduate program.  
If the student is under 21 years of age and single, his legal residence is the address of his father or mother or legal guardian.  
If the student is married, he may establish his own residence. However, residence is not gained or lost by attending college. The legal residence of a college student is the residence prior to the current period of attending college, unless otherwise demonstrated by specific action changing such residence, such as paying New York State resident income tax or voting in New York State.  
If a student has any questions concerning these regulations, he should consult the Dean of the College.

ESTIMATED ANNUAL EXPENSE (These expenses may be reduced by financial aid available to the student)

|                    | Undergraduate N.Y. State Resident | Out-of-State Resident | All Graduate Students |
|--------------------|-----------------------------------|-----------------------|-----------------------|
| Room (Per Student) | \$ 320                            | \$ 320                | \$ 320                |
| Board              | 530                               | 530                   | 530                   |
| Tuition            | 400                               | 600                   | 600                   |
| Fee                | 130                               | 130                   | 75                    |
| Books              | 50                                | 50                    | 60                    |
|                    | \$1,430                           | \$1,630               | \$1,585               |

(All freshmen and sophomores are required to room and board in University residence halls).

All sophomores are required to remain three weeks for a special program immediately following the close of the regular school year. During this three week inter-session the cost may be estimated as follows: Residence hall room \$30.00, board in cafeteria \$45.00, fee, \$10.00.

NOTES ON EXPENSES

The Tuition and Fee for all full-time students include the library fee, admission to the University Cultural Program, home athletic games, and Campus Center fee. Tuition also covers the services of the University physician and nurses for a maximum of two weeks in the Clawson Health Center. A fee of \$4 a day is charged for infirmary care beyond two weeks, and the costs of operations and prescriptions are personal expenses.  
The fee for full-time undergraduate students also includes student assessments for the *Fiat Lux* (student newspaper), the *Kanakadea* (student annual), Student Senate, and the Student Branch of American Ceramic Society.

\*Tuition, fees, and charges for board and room are all subject to change without notice.

Special fees are as follows:

1. A late registration fee of \$5 is charged to cover the cost of processing registrations which are not made during the prescribed times.
2. Students residing in University facilities are charged a linen fee of \$28 for bed linen and towels.
3. A graduation fee of \$15 is charged to everyone receiving a degree.
4. Students taking elective courses in the College of Liberal Arts beyond those required for graduation will be expected to pay tuition and laboratory fees for such courses.
5. *A charge will be made for any and all courses that are repeated for any purpose. The charge for such courses will be determined by the rate of accessory instruction which the State pays for courses generally.*

The amount each student will spend for personal items such as clothing, travel, and entertainment varies so widely that it is not included in the estimates of expenses.

#### DEPOSITS

Breakage deposits are required in courses involving laboratory work wherein glassware or other apparatus may be broken or lost. At the end of such a course, the value of missing or broken items will be deducted from the breakage deposit and the balance refunded to the student.

All students in Design make a deposit of \$75.00 to cover the cost of art supplies needed in their work. The amount returned to the student as a refund will depend on the cost of the items received.

#### PAYMENTS AND REBATES

A bill covering all charges for a semester is presented to each student at registration. Semester bills are due when issued and must be paid before the student is eligible to attend classes. Special arrangements may be made for the total bill to be mailed to parents for immediate payment.

Rebates in the regular academic year are as follows: For students withdrawing during the week of registration, 100 per cent of tuition and student fees (the \$50 acceptance deposit will be withheld on such a withdrawal); for a withdrawal during the first week of classes, 80 per cent; during the second week, 60 per cent; third week, 40 per cent; fourth week, 20 per cent. There will be no rebates for withdrawals after the fourth week. There will be no rebates on fees charged for University room, whereas board fees are refunded on a pro-rata basis.

Special procedures for refunds have been adopted for men called into military service prior to the end of a semester.

#### THE MIDLAND TIME PLAN

Some parents prefer to pay on a time-payment basis. The Marine Midland Banks in New York State have accordingly developed the Midland Time Plan for budgeting the educational expenses of the regular school year in convenient monthly installments. Any item of cost generally recognized by educational institutions as being directly

related to the student's education may be included in the loan. Such items include, but are not necessarily limited to, tuition, room, board, fees, books, and fraternity, sorority, or similar expenses.

#### FINANCIAL AID

New York State offers various types of financial assistance to qualified college students who are State residents. It is very important that students seeking such aid obtain full information and meet promptly each application deadline.

**SCHOLAR INCENTIVE PROGRAM.** Applications should be filed before July 1 for each academic year, but will be accepted up to December 1. Applications for the spring semester have an April 1 deadline. Annual application is required.

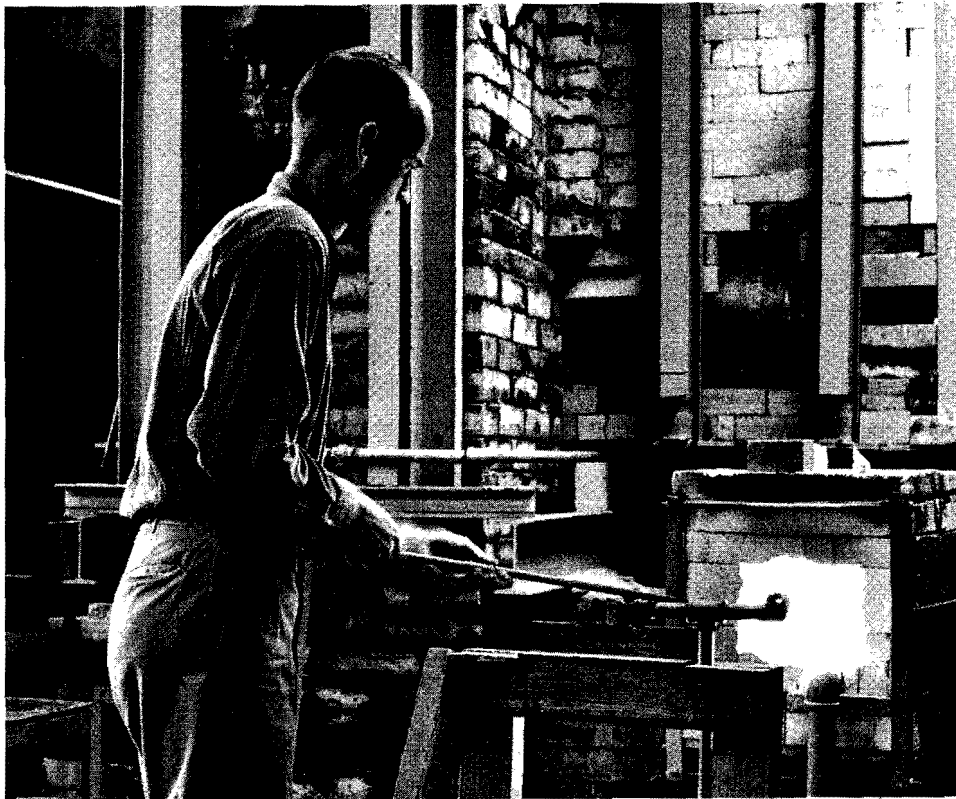
**REGENTS COLLEGE SCHOLARSHIPS FOR UNDERGRADUATES.** Candidates should seek directions from their high school principal and/or guidance counselor.

Information on all of the above items may be obtained by writing Regents Examination and Scholarship Center, New York State Education Department, Albany 1, New York. Students seeking New York State guaranteed loans should apply to New York Higher Education Assistance Corporation, 111 Washington Avenue, Albany 24, New York.

**SCHOLARSHIPS.** Richard H. Pass Memorial Scholarship for a student enrolled in the College of Ceramics and is for the benefit of children of employees of Onondaga Pottery Company and Pass and Seymour, Inc., Syracuse, New York.



## CURRICULA



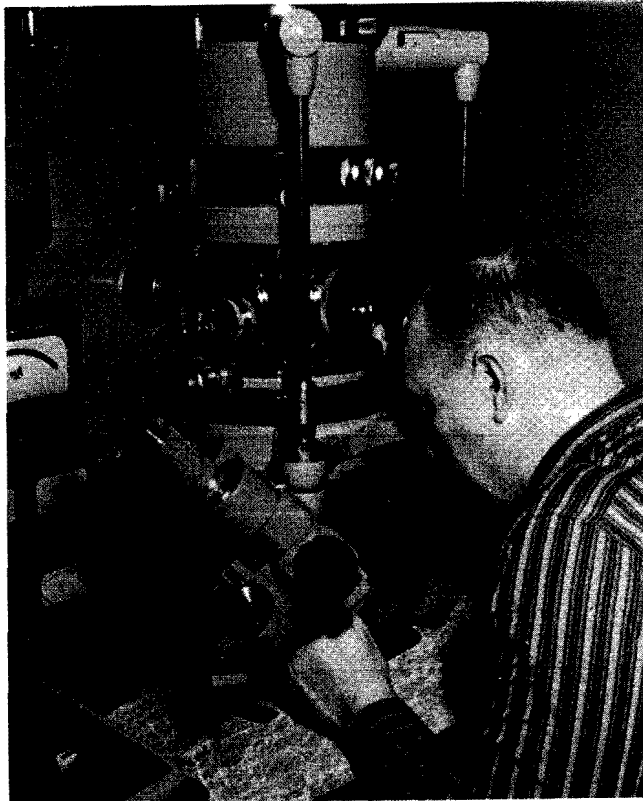
CERAMIC ENGINEERING

CERAMIC SCIENCE

GLASS SCIENCE

CERAMIC ART

## CERAMIC ENGINEERING



Engineering is a profession for which a student must prepare himself, not only in science and technology, but also in the humanities. An engineer must assume an obligation to protect the welfare of mankind, to attain enduring excellence through continued study, and to live according to ethical standards of conduct as in all recognized professions.

The engineer is neat, orderly, and accurate. He designs, creates, and exercises sound judgment. As he carries out his assignments, he is ever conscious of the economic factors involved and of the necessity for safeguarding life, health, and property. An engineer communicates with others with clarity and finesse, not only to get a job done, but also to promote harmony among those with whom he works.



Programs leading to a degree in engineering prepare the student for his internship which will last at least four years and which will, in turn, prepare him for the professional examination he must pass before he can call himself an engineer.

The ceramic industry has need for engineers. It desires those who can apply their knowledge of the sciences and ceramic technology to its advancement. It needs engineers for production, research, development, teaching, and sales.

The undergraduate program leading to the Bachelor of Science degree in Ceramic Engineering prepares the student for a career as a professional engineer. After completing the course, he is eligible to take the Engineer-in-Training examination as well as the final examination required for the Professional Engineer's License.

CERAMIC ENGINEERING

| First Year                              |              |                                         |              |
|-----------------------------------------|--------------|-----------------------------------------|--------------|
| First Semester                          | credit hours | Second Semester                         | credit hours |
| Mathematics 117 (Analyt. Geom.) . . . . | 3            | Mathematics 218 (Calculus) . . . . .    | 4            |
| Chemistry 105 (General Inorganic) . . . | 4            | Chemistry 106 (General Inorganic) . . . | 4            |
| English 101 (Composition) . . . . .     | 3            | English 102 (Composition) . . . . .     | 3            |
| Civilization 101 . . . . .              | 3            | Civilization 102 . . . . .              | 3            |
| E.G. 101 (Engineering Graphics) . . . . | 2            | E.G. 102 (Engineering Graphics) . . . . | 2            |
| CE 101 (Introduction) . . . . .         | 2            | CE 102 (Introduction) . . . . .         | 1            |
| P.E. 101 or M.S. 111 . . . . .          | 1            | P.E. 102 or M.S. 112 . . . . .          | 1            |
| Assembly . . . . .                      | 0            | Assembly . . . . .                      | 0            |
|                                         | 18           |                                         | 18           |

| Second Year                          |              |                                         |              |
|--------------------------------------|--------------|-----------------------------------------|--------------|
| First Semester                       | credit hours | Second Semester                         | credit hours |
| Mathematics 219 (Calculus) . . . . . | 4            | Mathematics 372 (Diff. Equat.) . . . .  | 4            |
| Chemistry 215 (Analytical) . . . . . | 3            | Chemistry 244 (Introd. to Phy. Chem.) . | 3            |
| Physics 211 (General) . . . . .      | 4            | Physics 212 (General) . . . . .         | 4            |
| CE 205 (Materials) . . . . .         | 3            | Geology 206 (Structural) . . . . .      | 3            |
| Mineralogy 201 . . . . .             | 3            | CE 206 (Unit Operations) . . . . .      | 4            |
| P.E. 203 or M.S. 221 . . . . .       | 1            | P.E. 204 or M.S. 222 . . . . .          | 1            |
| Assembly . . . . .                   | 0            | Assembly . . . . .                      | 0            |
|                                      | 18           |                                         | 19           |

Interession term of three weeks following close of Second Semester<sup>1</sup>  
Special fields (Symposium) . . . . . 3

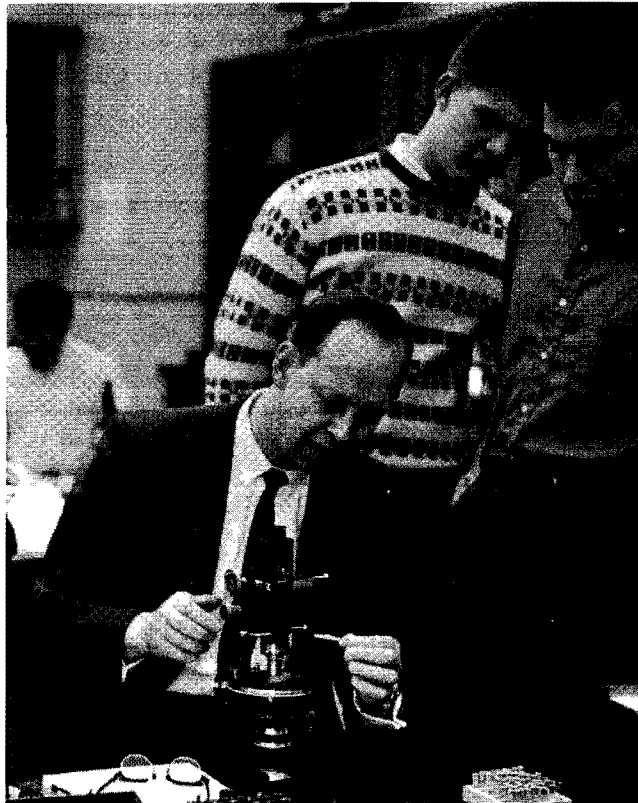
<sup>1</sup>R.O.T.C. students are required to attend the Symposium following their sophomore year.

| Third Year                                |              |                                           |              |
|-------------------------------------------|--------------|-------------------------------------------|--------------|
| First Semester                            | credit hours | Second Semester                           | credit hours |
| Non-Tech. Elective or M.S. 331 . . . . .  | 3            | Non-Tech. Elective or M.S. 332 . . . . .  | 3            |
| Physics 337 (Mechanics) . . . . .         | 4            | Physics 338 (Str. of Materials) . . . . . | 4            |
| Chemistry 345 (Physical Chem.) . . . .    | 4            | Petrography 302 . . . . .                 | 3            |
| CE 303 (Unit Processes) . . . . .         | 4            | CE 304 (Properties of Cer.) . . . . .     | 4            |
| English 335 (Technical Writing) . . . . . | 2            | CE 334 (Electrical Science) . . . . .     | 3            |
|                                           | 17           |                                           | 17           |

| Fourth Year                              |              |                                        |              |
|------------------------------------------|--------------|----------------------------------------|--------------|
| First Semester                           | credit hours | Second Semester                        | credit hours |
| Non-Tech. Elective . . . . .             | 3            | Non-Tech. Elective . . . . .           | 3            |
| Economics 211 (Prin. and Probs.) . . . . | 3            | Economics 212 (Prin. and Probs.) . . . | 3            |
| CE 331 (Thermal Engineering) . . . . .   | 3            | CE 422-472 (Eng. II) . . . . .         | 5            |
| CE 421 (Engineering I) . . . . .         | 2            | CE 462 (Thesis) . . . . .              | 2            |
| CE 461 (Thesis) . . . . .                | 2            | Ceramic Electives . . . . .            | 3            |
| Technical Elective or M.S. 441 . . . . . | 3            | Tech. Elective or M.S. 442 . . . . .   | 3            |
| CE 401 (Glazes) . . . . .                | 2            |                                        |              |
| CE 426 (Plant Inspection) . . . . .      | 0            |                                        | 19           |
|                                          | 18           |                                        |              |

Total required hours for graduation . . . . . 147

## CERAMIC SCIENCE



A ceramic scientist is a person who has competency in chemistry, physics, mathematics, the earth sciences, and in ceramic science. He is a person who has an interest in research and development. Having an understanding of the art of ceramics and having an imaginative, curious mind, he applies his scientific knowledge to the development of new concepts, new processes, and new products.

The program leading to the degree of Bachelor of Science in Ceramic Science, while involving studies in depth in chemistry, physics, mathematics, and ceramic science, involves also studies in the humanities. It is particularly suited to those students who wish to prepare themselves for graduate study. It is a flexible program permitting a person, through electives, to take extra courses in one of the basic sciences, in mathematics, in the earth sciences, or in ceramic science.

The ceramic industry has need for persons who can bring to it a sound understanding of the basic sciences, a knowledge of its art, and a desire to contribute to its advancement. It needs persons equipped and willing to take on the tasks of innovating compositions, processes, and products for jet engines, for nuclear reactors, for electronics, for outer space vehicles as well as for everyday ceramics.

The industry recognizes that its future will depend greatly on the availability of competent ceramic scientists.

# CERAMIC SCIENCE

| First Year                              |              |                                         |              |
|-----------------------------------------|--------------|-----------------------------------------|--------------|
| First Semester                          | credit hours | Second Semester                         | credit hours |
| Mathematics 117 (Analyt. Geom.) . . . . | 3            | Mathematics 218 (Calculus) . . . . .    | 4            |
| Chemistry 105 (General Inorganic) . . . | 4            | Chemistry 106 (General Inorganic) . . . | 4            |
| English 101 (Composition) . . . . .     | 3            | English 102 (Composition) . . . . .     | 3            |
| Civilization 101 . . . . .              | 3            | Civilization 102 . . . . .              | 3            |
| E.G. 101 (Engineering Graphics) . . . . | 2            | E.G. 102 (Engineering Graphics) . . . . | 2            |
| CE 101 (Introduction) . . . . .         | 2            | CE 102 (Introduction) . . . . .         | 1            |
| P.E. 101 or M.S. 111 . . . . .          | 1            | P.E. 102 or M.S. 112 . . . . .          | 1            |
| Assembly . . . . .                      | 0            | Assembly . . . . .                      | 0            |
|                                         | 18           |                                         | 18           |

| Second Year                          |              |                                          |              |
|--------------------------------------|--------------|------------------------------------------|--------------|
| First Semester                       | credit hours | Second Semester                          | credit hours |
| Mathematics 219 (Calculus) . . . . . | 4            | Mathematics 372 (Diff. Equat.) . . . .   | 4            |
| Chemistry 215 (Analytical) . . . . . | 3            | Chemistry 244 (Introd. to Phys. Chem.) . | 3            |
| Physics 211 (General) . . . . .      | 4            | Physics 212 (General) . . . . .          | 4            |
| CE 205 (Materials) . . . . .         | 3            | Geology 206 (Structural) . . . . .       | 3            |
| Mineralogy 201 . . . . .             | 3            | CE 206 (Unit Operations) . . . . .       | 4            |
| P.E. 203 or M.S. 221 . . . . .       | 1            | P.E. 204 or M.S. 222 . . . . .           | 1            |
| Assembly . . . . .                   | 0            | Assembly . . . . .                       | 0            |
|                                      | 18           |                                          | 19           |

Intersession term of three weeks following close of Second Semester<sup>1</sup>  
Special fields (Symposium) . . . . . 3

<sup>1</sup>R.O.T.C. students are required to attend the Symposium following their sophomore year.

| Third Year                                |              |                                          |              |
|-------------------------------------------|--------------|------------------------------------------|--------------|
| First Semester                            | credit hours | Second Semester                          | credit hours |
| Non-Tech. Elective or M.S. 331 . . . . .  | 3            | Non-Tech. Elective or M.S. 332 . . . . . | 3            |
| Chemistry 345 (Physical Chem.) . . . .    | 4            | Chemistry 348 (Adv. Phy. Chem.) . . . .  | 4            |
| CE 303 (Unit Processes) . . . . .         | 4            | Petrography 302 . . . . .                | 3            |
| CE 331 (Thermal Engr.) . . . . .          | 3            | CE 304 (Props. of Cer.) . . . . .        | 4            |
| English 335 (Technical Writing) . . . . . | 2            | CE 334 (Electrical Sci.) . . . . .       | 3            |
|                                           | 16           | Ceramic Elective . . . . .               | 2            |
|                                           |              |                                          | 19           |

| Fourth Year                              |              |                                        |              |
|------------------------------------------|--------------|----------------------------------------|--------------|
| First Semester                           | credit hours | Second Semester                        | credit hours |
| Non-Tech. Elective . . . . .             | 3            | Non-Tech. Elective . . . . .           | 3            |
| Economics 211 (Prin. and Probs.) . . . . | 3            | Economics 212 (Prin. and Probs.) . . . | 3            |
| CE 423 (Adv. Cer. Tech.) . . . . .       | 2            | CE 424 (Adv. Cer. Tech.) . . . . .     | 2            |
| CE 461 (Thesis) . . . . .                | 2            | CE 462 (Thesis) . . . . .              | 2            |
| Ceramic Elective or M.S. 441 . . . . .   | 3            | Ceramic Elective . . . . .             | 3            |
| CE 437 (Physiochem. Equil.) . . . . .    | 2            | Math 466 (Statistics) . . . . .        | 3            |
| CE 426 (Plant Inspection) . . . . .      | 0            | Technical Elective or M.S. 442 . . . . | 3            |
| *Technical Elective . . . . .            | 3            |                                        | 19           |
|                                          | 18           |                                        |              |

Total Required Hours for Graduation . . . . . 148

\*Potential graduate students are encouraged to take Advanced Calculus (Math. 467) for this Technical Elective.

## GLASS SCIENCE



The curriculum in Glass Science prepares graduates for usefulness in the glass, electronic, and enamel industries. In its flexibility, it provides the opportunity for the student to concentrate on the technical aspects of glass, on the engineering aspects of glass manufacture, or to direct his program toward future graduate study.

Regardless of the program elected, the student in glass science is required to take courses in physical chemistry, electricity, petrography, heat and thermodynamics, glass composition, the physics of glass, and thesis. If the student is interested in the engineering aspects of glass manufacture, his program will include courses in glass melting, material and energy balances, mechanics, strength of materials, glass engineering, and other subjects which assist him in preparation for professional engineering. The student interested in the more technical aspects will follow a program which includes courses in advanced chemistry, advanced petrography, spectroscopy, statistics, and other advanced technical subjects. The student desiring to go on to graduate study will follow a program of advanced scientific and mathematics courses and will have the opportunity to study a foreign language.

At the completion of three semesters after midterm examinations during the sophomore year, the student electing to study glass science must, with the help of his advisor, outline a program for the remaining five semesters of his college career. This program is subject to review by the Chairman of the Glass Science Department and the Dean of the College and must be approved by them before it can be accepted. Subsequent revision of an approved program will be permitted only if an adequate aim for such revision can be demonstrated, and, in such instances, it is to be expected that there will be an increase in the number of credit hours required for graduation.

The department offers an opportunity for research in glass to those who are adequately prepared by college or plant experience. Glass manufacturers are invited to send their employees for further training and to establish fellowships for the study of special problems.

In general, all courses offered by the Glass Science Department, by the Ceramic Engineering Department, by the Chemistry and Physics Departments, and by the Mathematics Departments beyond those required for the Glass Science program are suitable for technical electives in the glass program. However, the courses elected must form a coherent whole. To ensure this, they must be reviewed and approved by the student's advisor and by the department chairman before registration. Certain courses in Economics and Business constitute technical electives and may be selected as such. Others may be counted as non-technical electives.

For a pre-engineering program, the following courses are essential and must be elected:

Glass 404—Melting  
Physics 338—Strength of Materials

#### GLASS SCIENCE

| First Year                              |              |                                         |              |
|-----------------------------------------|--------------|-----------------------------------------|--------------|
| First Semester                          | credit hours | Second Semester                         | credit hours |
| Mathematics 117 (Analyt. Geom.) . . . . | 3            | Mathematics 218 (Calculus) . . . . .    | 4            |
| Chemistry 105 (General Inorganic) . . . | 4            | Chemistry 106 (General Inorganic) . . . | 4            |
| English 101 (Composition) . . . . .     | 3            | English 102 (Composition) . . . . .     | 3            |
| Civilization 101 . . . . .              | 3            | Civilization 102 . . . . .              | 3            |
| E.G. 101 (Engineering Graphics) . . . . | 2            | E.G. 102 (Engineering Graphics) . . . . | 2            |
| CE 101 (Introduction) . . . . .         | 2            | CE 102 (Introduction) . . . . .         | 1            |
| P.E. 101 or M.S. 111 . . . . .          | 1            | P.E. 102 or M.S. 112 . . . . .          | 1            |
| Assembly . . . . .                      | 0            | Assembly . . . . .                      | 0            |
|                                         | 18           |                                         | 18           |

| Second Year                          |              |                                          |              |
|--------------------------------------|--------------|------------------------------------------|--------------|
| First Semester                       | credit hours | Second Semester                          | credit hours |
| Mathematics 219 (Calculus) . . . . . | 4            | Mathematics 372 (Diff. Equat.) . . . . . | 4            |
| Chemistry 215 (Analytical) . . . . . | 3            | Chemistry 244 (Introd. to Phy. Chem.) .  | 3            |
| Physics 211 (General) . . . . .      | 4            | Physics 212 (General) . . . . .          | 4            |
| CE 205 (Materials) . . . . .         | 3            | Geology 206 (Structural) . . . . .       | 3            |
| Mineralogy 201 . . . . .             | 3            | Glass 202 (Glass Chemistry) . . . . .    | 4            |
| P.E. 203 or M.S. 221 . . . . .       | 1            | P.E. 204 or M.S. 222 . . . . .           | 1            |
| Assembly . . . . .                   | 0            | Assembly . . . . .                       | 0            |
|                                      | 18           |                                          | 19           |

Interession term of three weeks following close of Second Semester<sup>1</sup>  
Special fields (Symposium) . . . . . 3

<sup>1</sup>R.O.T.C. students are required to attend the Symposium following their sophomore year.

Students preparing for graduate school are strongly advised to elect German or Russian.

At least 15 hours of such technical elective courses must be selected with approval of the advisor and the Chairman of the Glass Science Department. At least 12 hours of non-technical courses approved by the student's advisor and the Chairman of the Glass Department must also be selected, making a total of 150 hours required for graduation with the Bachelor of Science Degree in Glass Science.

| Third Year                              |              |                                        |              |
|-----------------------------------------|--------------|----------------------------------------|--------------|
| First Semester                          | credit hours | Second Semester                        | credit hours |
| Elective or M.S. 331 . . . . .          | 3            | Elective or M.S. 332 . . . . .         | 3            |
| Physics 337 (Mechanics) . . . . .       | 4            | Elective . . . . .                     | 3            |
| Chemistry 345 (Physical Chem.) . . . .  | 4            | Petrography 302 . . . . .              | 3            |
| Glass 301 (Manufacturing) . . . . .     | 5            | Glass 302 (Properties I) . . . . .     | 5            |
| English 335 (Technical Writing) . . . . | 2            | Chemistry 348 (Adv. Phys. Chem.) . . . | 4            |
|                                         | 18           |                                        | 18           |

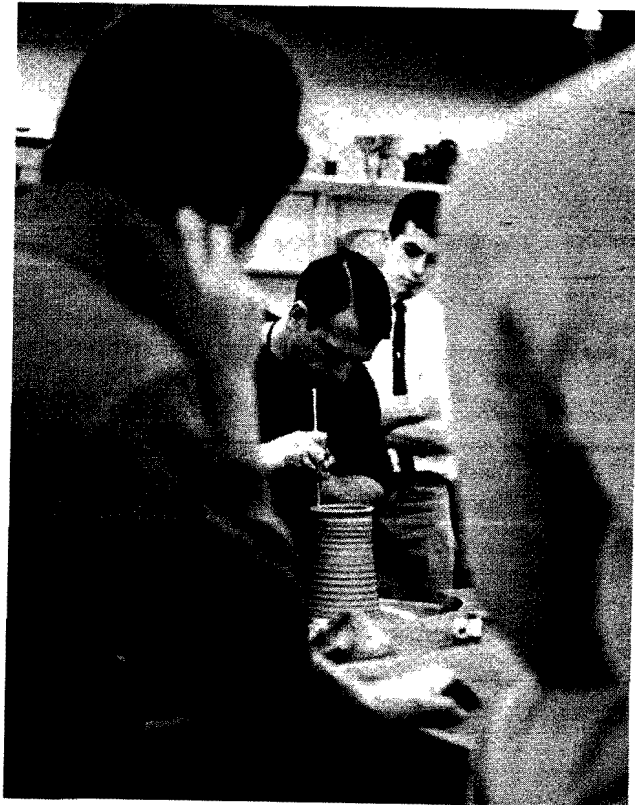
| Fourth Year                             |              |                                       |              |
|-----------------------------------------|--------------|---------------------------------------|--------------|
| First Semester                          | credit hours | Second Semester                       | credit hours |
| Elective or M.S. 441 . . . . .          | 3            | Electives or M.S. 442 . . . . .       | 9            |
| Elective . . . . .                      | 3            | CE 334 (Electrical Science) . . . . . | 3            |
| CE 331 (Thermal Engineering) . . . . .  | 3            | †Glass 404 (Melting) . . . . .        | 3            |
| Economics 211 (Prin. and Probs.) . . .  | 3            | Glass 462 (Thesis) . . . . .          | 2            |
| *Glass 403 (Properties II) . . . . .    | 3            | Glass 472 (Seminar) . . . . .         | 1            |
| Glass 381 (Plant Inspection Trip) . . . | 0            |                                       | 18           |
| Glass 461 (Thesis) . . . . .            | 2            |                                       |              |
| Glass 471 (Seminar) . . . . .           | 1            |                                       |              |
|                                         | 18           |                                       |              |

Total Required Hours for Graduation . . . 148

\*With permission, Glass 405 taken for 3 credit hours, may be substituted for Glass 403.

†With permission, Glass 406 taken for 3 credit hours, may be substituted for Glass 404.

## CERAMIC ART



The Bachelor of Fine Arts (B.F.A.) program offers four years of diverse experiences in the arts, design, science, and the humanities with "Ceramics" as the unifying discipline. The program has two main objectives: to provide a student with the sound creative education which will make him a productive member of society and to provide him with a preparation for advanced study in various specialized programs offered by graduate schools throughout the country and abroad.

A two-year foundation program is carried by all students. This includes lecture studies in history, literature, mathematics, a science and the history of art, as well as laboratory and studio work in painting, sculpture, and visual and dimensional design. In addition, a three-week intersession course must be taken at the end of the first year. This is a period of concentrated development of drawing and forming skills.

A core of studies in ceramics is required during the last two years. These studies involve the development of technical knowledge, forming skills, and the application of the preparatory studies to ceramic processes. Advanced study in painting and sculpture, or in visual and dimensional design may be elected to direct the student's overall program toward art or design as chosen at the end of the first two years. Liberal arts subjects may also be elected as supporting studies, and this privilege makes the program comparatively flexible while at the same time permitting the student to develop in a manner appropriate to his desires.

A minimum of 143 hours is required for graduation. The College reserves the right to retain selected examples of student work. Freshmen enrollment is limited to 35 students, and preference is given to applicants whose high school record places them in the upper third of their graduating class, and/or who show evidence of exceptional ability for creative design.

Those qualified for advanced study in Ceramic Design are offered a two-year residence program leading to the Master of Fine Arts degree (M.F.A.). This program

provides for a concentrated development of ceramics in its historical, technical, and aesthetic dimensions. Its objective is to prepare the student for a creative way of life in the professional fields of ceramic art and ceramic design.

# CERAMIC ART

| First Year                                |              |                                        |              |
|-------------------------------------------|--------------|----------------------------------------|--------------|
| First Semester                            | credit hours | Second Semester                        | credit hours |
| Design 131 (Visual Design I) . . . . .    | 4            | Design 112 (Drawing) . . . . .         | 4            |
| Design 141 (Dimensional Des. I) . . . . . | 4            | Design 122 (Sculpture I) . . . . .     | 4            |
| Design 151 (Seminar) . . . . .            | 1            | Design 152 (Seminar) . . . . .         | 1            |
| Design 153 (Technical Draw.) . . . . .    | 2            | Design 154 (Technical Draw.) . . . . . | 2            |
| Design 161 (Intro. to Art) . . . . .      | 2            | Design 162 (Intro. to Art) . . . . .   | 2            |
| Civilization 101 . . . . .                | 6            | Civilization 102 . . . . .             | 6            |
| P.E. 101 or M.S. 111 . . . . .            | 1            | P.E. 102 or M.S. 112 . . . . .         | 1            |
| Assembly . . . . .                        | 0            | Assembly . . . . .                     | 0            |
|                                           | 20           |                                        | 20           |

Interession term of three weeks following close of Second Semester  
111S (Life Drawing and Pottery) . . . . .3

| Second Year                                |              |                                         |              |
|--------------------------------------------|--------------|-----------------------------------------|--------------|
| First Semester                             | credit hours | Second Semester                         | credit hours |
| Design 211 (Painting I) . . . . .          | 4            | Design 232 (Visual Design II) . . . . . | 4            |
| Design 221 (Sculpture II) . . . . .        | 2            | Design 252 (Drawing) . . . . .          | 1            |
| Design 241 (Dimensional Des. II) . . . . . | 2            | Design 262 (Modern Art II) . . . . .    | 2            |
| Design 251 (Drawing) . . . . .             | 1            | Design 272 (Pottery-Forming) . . . . .  | 4            |
| Design 261 (Modern Art I) . . . . .        | 2            | Design 274 (Glaze Calc.) . . . . .      | 3            |
| Design 273 (Cer. Mat'ls) . . . . .         | 3            | Mathematics* . . . . .                  | 3            |
| Science** . . . . .                        | 3            | P.E. 204 or M.S. 222 . . . . .          | 1            |
| P.E. 203 or M.S. 221 . . . . .             | 1            | Assembly . . . . .                      | 0            |
| Assembly . . . . .                         | 0            |                                         | 18           |
|                                            | 18           |                                         |              |

\*For Mathematics, see Department Head, or Advisor.  
\*\*Chemistry or Geology.

| Third Year                                   |              |                                              |              |
|----------------------------------------------|--------------|----------------------------------------------|--------------|
| (A minimum of 16 hours each semester)        |              |                                              |              |
| First Semester                               | credit hours | Second Semester                              | credit hours |
| Design 311 (Painting II) . . . . .           | 2-4          | Design 312 (Painting II) . . . . .           | 2-4          |
| *Design 321 (Sculpture III) . . . . .        | 2-4          | *Design 322 (Sculpture III) . . . . .        | 2-4          |
| Design 331 (Graphics I) . . . . .            | 2-4          | Design 332 (Graphics I) . . . . .            | 2-4          |
| Design 341 (Dimen. Design III) . . . . .     | 2-4          | Design 342 (Dimen. Des. III) . . . . .       | 2-4          |
| Design 351 (Drawing) . . . . .               | 1            | Design 352 (Drawing) . . . . .               | 1            |
| Design 353 (Adv. Tech. Draw.) . . . . .      | 2            | Design 354 (Adv. Tech. Draw.) . . . . .      | 2            |
| **Art History . . . . .                      | 3            | **Art History . . . . .                      | 3            |
| *Design 371 (Pottery-Forming) . . . . .      | 4            | *Design 372 (Pottery-Forming) . . . . .      | 4            |
| Elective in Design or Liberal Arts . . . . . | 4            | Elective in Design or Liberal Arts . . . . . | 4            |
| M.S. 331 . . . . .                           | 3            | M.S. 332 . . . . .                           | 3            |

| Fourth Year                                    |              |                                                 |              |
|------------------------------------------------|--------------|-------------------------------------------------|--------------|
| (A minimum of 16 hours each semester)          |              |                                                 |              |
| First Semester                                 | credit hours | Second Semester                                 | credit hours |
| Design 411 (Painting III) . . . . .            | 2-8          | Design 412 (Painting III) . . . . .             | 2-8          |
| Design 421 (Sculpture IV) . . . . .            | 2-8          | Design 422 (Sculpture IV) . . . . .             | 2-8          |
| Design 431 (Graphics II) . . . . .             | 2-8          | Design 432 (Graphics II) . . . . .              | 2-8          |
| Design 433 (Photography II) . . . . .          | 2            | Design 434 (Photography II) . . . . .           | 2            |
| Design 441 (Dimen. Des. IV) . . . . .          | 2-8          | Design 442 (Dimen. Des. IV) . . . . .           | 2-8          |
| Design 451 (Drawing) . . . . .                 | 1            | Design 452 (Drawing) . . . . .                  | 1            |
| <sup>1</sup> Design 461 (Art Theory) . . . . . | 2            | <sup>1</sup> Design 462 (Art Theory) . . . . .  | 2            |
| *Design 471 (Pottery) . . . . .                | 2-8          | *Design 472 (Pottery) . . . . .                 | 2-8          |
| *English 223 (Mod. Lit.) . . . . .             | 3            | Design 474 (Advanced Glaze Theory) . . . . .    | 2            |
| Electives in Design or Liberal Arts . . . . .  | 12           | <sup>1</sup> Design 476 (Kiln Design) . . . . . | 2            |
| M.S. 441 . . . . .                             | 3            | *English 224 (Mod. Lit.) . . . . .              | 3            |
|                                                |              | Electives in Design or Liberal Arts . . . . .   | 12           |
|                                                |              | M.S. 442 . . . . .                              | 3            |

\*Required for graduation.  
\*\*Six elective hrs. required in the area. (De 361 thru De 366)  
<sup>1</sup>Required for Master of Fine Arts Degree.

## ALPHABETICAL LISTING OF COURSES

The following points apply to the numbering of the courses: Courses having odd numbers are generally given in the first semester; courses having even numbers are generally given in the second semester. Courses ending in zero (0) are taught both semesters.

Hyphenated numbered courses (i.e., 101-102 or 105-106) are year courses subject to special regulations:

- (a) A student is expected to complete satisfactorily both semesters of the course (credit for one semester may be obtained only by special permission of the Chairman of the Department followed by the approval of the Dean).
- (b) An "F" grade for the first semester bars the student from enrolling for the second semester.
- (c) A student may not begin these courses in the second semester.

In addition to year courses, successive courses of one semester each may be listed together (i.e. 101 and 102 or 461 and 462) to express a desirable continuity without bringing to bear the year-course regulations.

Course descriptions often specify other courses as prerequisites. Such a prerequisite is satisfied where the specified course is completed with a grade of D+ (or for an average of D+ if the prerequisite is a year course).

### BIOLOGY

**B10 101-102. GENERAL BIOLOGY** 4 hrs.  
A survey of the structural features, development, inheritance, evolution and interrelationships of plants and animals. Emphasis will be given to the underlying principles that have emerged during the development of biology as a science. Laboratory work will stress the importance of observation and experiment in the formulation of these unifying generalizations. Two lectures, two laboratory periods, one discussion section.

### CERAMIC ENGINEERING

**CE 101. A STUDY OF THE CERAMIC INDUSTRIES** 2 hrs.  
One lecture per week plus Laboratory.

**CE 102. A STUDY OF THE CERAMIC INDUSTRIES** 1 hr.  
One lecture per week.

**CE 205. MATERIALS** 3 hrs.  
The fundamentals of material science are developed and applied to the study of ceramic phases and raw materials. Physical and chemical properties are correlated with composition, structure, and chemical bonding. Three lectures. Offered first semester.

**CE 206. UNIT OPERATIONS** 4 hrs.  
The engineering aspects of typical and fundamental operations in each process of the ceramic industries. Three lectures, two laboratory periods. Offered second semester.

**CE 303. UNIT PROCESSES** 4 hrs.  
The study of the physical chemical principles that are the foundation of ceramic fabrication processes. Included are the topics of structural imperfections, surface effects,



with emphasis on clay-water systems, diffusion, nucleation, crystal growth, sintering, and vitrification. Four lectures. Offered first semester.

**CE 304. PROPERTIES OF CERAMICS** 4 hrs.  
The study of the physical properties of the ceramic structures that are developed in the preceding course, CE 303. Included are thermal properties, optical properties, mechanical properties, and electrical and magnetic properties. Accompanying laboratory contains experiments which are planned to demonstrate the principles taught in lecture. Three lectures, one laboratory period. Offered second semester. Prerequisite CE 303.

**CE 331. THERMAL ENGINEERING** 3 hrs.  
Review of the laws of thermodynamics and their application to ceramic reactions and processes, principles of heat transfer, temperature measurement and instrumentation. Three lectures. Prerequisites Physics 211-212 and Mathematics 117, 218.

**CE 334. ELECTRICAL SCIENCE** 3 hrs.  
A treatment of the theoretical basis of electrical science in which the fundamentals and applications of semi-conductors are emphasized. Three lectures. Prerequisites Physics 211-212 and Mathematics 117, 218.

**CE 401. GLAZES** 2 hrs.  
Application of glazes to the ceramic industry. Glaze compositions, methods of applying glazes and colors will be considered. One lecture, one laboratory period. Offered first semester.

**\*CE 408. STRUCTURAL CLAY PRODUCTS (Ceramic Elective)** 2 hrs.  
Specialization in the technology and the engineering aspects of the structural-clay-products industry. Two lectures. Offered second semester.

**\*CE 409. WHITEWARES (Ceramic Elective)** 3 hrs.  
A study of bodies, glazes, and colors. A specialized course in the technology and engineering aspects of the industry in which complex whiteware mixtures and glazes are employed. Three lectures. Offered first semester.

**\*CE 414. REFRACTORIES (Ceramic Elective)** 3 hrs.  
A study of the fundamental technology of all refractories and the engineering aspects of their production and use. Three lectures. Offered second semester. Prerequisite CE 205.

**\*CE 415. LIME, GYPSUM, AND CEMENT (Ceramic Elective)** 3 hrs.  
The properties, manufacture, testing, and uses of cementing materials with particular regard to basic principles. Three lectures. Offered first semester. Prerequisite CE 205.

**\*CE 418. ENAMELS (Ceramic Elective)** 2 hrs.  
The technology of the application of vitreous enamels to metals. Two lectures. Offered second semester. Prerequisite CE 205. See also CE 468.\*

**CE 421. ENGINEERING I** 2 hrs.  
The engineering features of structural planning and design. Two lectures. Offered first semester. Prerequisite CE 303, Physics 237, and 238.

**CE 422. ENGINEERING II** 2 hrs.  
The engineering features of plant layout, design, and the drying and firing of ceramic ware. Two lectures. Offered second semester. Associated with CE 472.

**\*CE 423 and 424. ADVANCED CERAMIC TECHNOLOGY** each semester 2 hrs.  
The study of solid-state reactions, ion exchange, unequilibrium crystallization, etc., and their ceramic implications. Two lectures.

**CE 426. PLANT INSPECTION** 0 hr.  
Each year a one-week plant trip enables students to observe the operations used in various types of ceramic plants. Approximately fifteen different plants or laboratories are visited during the trip, illustrating most of the principal types of ceramic production. Required of all seniors in Ceramic Engineering and Ceramic Technology.

**\*CE 437. PHYSICOCHEMICAL EQUILIBRIUM** 2 hrs.  
Advanced study and interpretation of phase equilibria in binary, ternary, and quaternary systems, especially those involving oxides and silicates. Emphasis is given to application of equilibrium and nonequilibrium reactions to ceramic processes.

**\*CE 459. WHITEWARE LABORATORY (Ceramic Elective)** 2 hrs.  
Laboratory studies to demonstrate the properties of whiteware raw materials, the preparation and testing of typical whiteware bodies, glazes, and colors. Associated with CE 409. Two laboratory periods. Offered first semester.

**\*CE 461 and 462. THESIS** each semester 2 hrs.  
Original research or investigation on some problem decided upon in conference with the instructor. Two laboratory periods.

**\*CE 464. HIGH TEMPERATURE, HIGH STRESS MATERIALS** 1 hr.  
Raw materials, fabrication, firing, properties of cermets, intermetallics, and oxide ceramics for use in high temperature-high stress applications. Second semester.

**\*CE 468. ENAMEL LABORATORY** 2 hrs.  
Two laboratory periods. Offered second semester. To be taken with \*CE 418.

**CE 472. ENGINEERING DESIGN** 3 hrs.  
Design practice in which the structural engineering details of plant design, plant layout, and plant equipment, including kilns and driers, are carried out. Three laboratory periods. Offered second semester. Associated with CE 422.

**CE 517 and 518. GRADUATE SEMINAR** hours to be arranged  
Weekly lectures and discussions with visiting lecturers, faculty members, and graduate students. Required of all graduate students throughout their residence.

**CE 526. ADVANCED CERAMIC ENGINEERING** 2 hrs.  
A study of the recent developments in furnaces, kilns, and equipment for ceramic plants. Two lectures. Offered second semester.

\*May be taken for graduate credit.

### CE 531. PROPERTIES OF MATERIALS

3 hrs.

Basic principles and properties of materials including organic and inorganic polymers, magnetic materials, ferro-electrics, dielectrics, high temperature materials, glasses, semiconductors, and energy conversion systems. Principles of reinforcement in metal-ceramic systems. Methods of materials testing. First semester.

### CE 544. GRADUATE CERAMICS

3 hrs.

The study of silicates, oxides, carbides, nitrides, borides, and intermetallic compounds; their compositions, fabrication, mechanisms and properties. Three lectures. Offered second semester.

### CERAMIC OR GLASS SYMPOSIUM

3 hrs.

(Required course to be taken by all undergraduate engineering and technology students). Each year authorities in a particular field of ceramics come to the campus to give lectures on developments which have taken place in their fields. Symposia have been held on refractories, whitewares, structural clay products, abrasives, enamels, and glass. The Symposium is held during the weeks immediately following commencement. This period is termed intersession. All engineering and technology students are expected to attend the Symposium that is held immediately following their sophomore year.

### GT 510. GRADUATE THESIS

Suitable projects for investigation and study are reviewed by the student in consultation with advisers and a subject of special interest is selected for study. The thesis subject must be formally approved by the student's committee prior to official acceptance. The student must not only prepare his thesis report in a manner suitable for publication, but must also pass an oral examination on his presentation.

## CHEMISTRY

### CH 105-106. GENERAL INORGANIC CHEMISTRY

each semester 4 hrs.

A systematic study of fundamental principles, theories, and calculations. Preferably for students who have had a year of high school chemistry. Laboratory work in the second semester includes an introductory study of inorganic qualitative analysis. Two lectures, one recitation, and two laboratory periods. Breakage deposit \$5.00.

### CH 205. CHEMISTRY

3 hrs.

A course in chemical principles, descriptive inorganic and organic chemistry, and chemical calculations for students in Ceramic Design. Two lectures and one three-hour laboratory period.

### CH 215. ANALYTICAL CHEMISTRY

3 hrs.

Introduction to gravimetric, volumetric, and physicochemical methods of analysis applied to analysis of cations and anions statistics and errors, treatment of numerical results, equilibrium, acid-base equilibria, acid-base titrations, solubility and formation of precipitates, precipitation titrations, complex formation titrations, electrode potentials. Two lectures, one laboratory, and one problem session. Prerequisite CH 105-106.

### CH 216. QUANTITATIVE ANALYSIS

4 hrs.

Volumetric and gravimetric analysis. Prerequisite: For students in College of Ceramics, Chemistry 105-106. Required of chemistry majors and recommended for pre-medical and pre-dental students. Two lectures, and two laboratory periods. Breakage deposit \$15.00. This course is offered in the College of Ceramics.

### CH 244. INTRODUCTION TO PHYSICAL CHEMISTRY

3 hrs.

Thermochemistry, thermodynamics, free energy and entropy, homogeneous equilibrium, gases, molal heat capacity, kinetic theory, introduction to phase diagrams. Three lectures and one problem session. Prerequisite CH 215.

### CH 345. PHYSICAL CHEMISTRY

3 hrs.

Reaction kinetics, activation energy, liquids, colloids, thermodynamics, adsorption, surface phenomena, introduction to electrochemistry. Three lectures and one problem session. Prerequisite CH 244.

### CH 345L. PHYSICAL CHEMISTRY LABORATORY

1 hr.

Experiments in thermochemistry, properties of liquids, vapor pressure of liquids, freezing point depression, heterogeneous equilibria, kinetics, adsorption, and electrochemistry. One laboratory to be taken concurrently with CH 345. Breakage deposit \$15.00.

### CH 346. FUNDAMENTALS OF ORGANIC CHEMISTRY

2 or 3 hrs.

A summary course, emphasizing as much as possible, applications of carbon compounds in ceramics. Elective, for undergraduate credit. Prerequisite CH 105-106. Two lectures.

### CH 348. ADVANCED PHYSICAL CHEMISTRY

3 hrs.

Bond theory, reaction kinetics, thermodynamics, surface chemistry, and electrochemistry. Prerequisite CH 345. Three lectures.

### CH 348L. ADVANCED PHYSICAL CHEMISTRY LABORATORY

1 hr.

To be taken with CH 346. One three-hour laboratory.

### \*CH 472. CHEMISTRY OF THE COLLOIDAL STATE

2 or 3 hrs.

Two lectures. Offered second semester. Prerequisite CH 341 and CH 342.

### CH 477. ELEMENTARY SPECTROSCOPY

3 hrs.

Basic principles of spectroscopic instruments, including sources, dispersing elements and detectors in relation to the measurement of radiation wavelength and intensity. The origin of atomic and molecular spectra, spectral series and notation. Qualitative and quantitative analysis by emission spectroscopy. Techniques and applications of ultraviolet, visible and infrared absorption spectrophotometry. Two lectures and one laboratory period per week, first semester.

### CH 502. ADVANCED PHYSICAL CHEMISTRY

3 hrs.

A study of equations of state, chemical equilibria—a) homogeneous, b) heterogeneous, diffusion phenomena, strong electrolytes, theory of dislocations, theory of nucleation phenomena, theory of crystal growth. Offered second semester. Prerequisite CH 503.

\*May be taken for graduate credit.

CH 503. GENERAL PHYSICAL CHEMISTRY 3 hrs.  
Atomic structure, chemical bonding and related properties, kinetic theory, thermodynamics, electrochemistry, spectroscopy and liquid state. Offered first semester. Prerequisite CH 345, MA 372, MA 467.

CH 507. WAVE MECHANICS 3 hrs.  
An introduction to wave mechanics and the required mathematics. Derivation of the Schrodinger wave equation for the H atom,  $H_2^+$  ion,  $H_2$  molecule, and He atom. Comparison of valence-bond and molecule orbital treatments. Molecular diagrams. Offered first semester.

CH 512. CHEMICAL KINETICS 3 hrs.  
A study of the rates and mechanisms of chemical reactions. Kinetic theory is reviewed and extended to collision and transition-state theories. The statistical treatment of reaction rates is covered. Special attention is given to surface and solid-state reactions, catalysis, viscosity, and diffusion processes. Offered second semester. Prerequisite CH 503.

CH 527. CRYSTAL CHEMISTRY 3 hrs.  
The principles of crystal chemistry; the nature of the bond; the sizes of atoms and ions, and the organization of these units into solid bodies. Greater emphasis is placed on the structure of silicates, both crystalline and glassy, than on other compounds or on metals. Three lectures. Offered first semester.

CH 529. INORGANIC CHEMISTRY 3 hrs.  
Inorganic compounds, applications of thermodynamics to inorganic chemistry in high temperature systems; acids, bases and non-aqueous solvents; coordination chemistry. Prerequisite CH 345.

CH 532. HIGH TEMPERATURE CHEMISTRY 3 hrs.  
High temperature materials and reactions, thermodynamics calculations, equilibrium, and kinetic studies. Offered second semester.

CH 535 and 536. SOLID STATE CHEMICAL PHYSICS each semester 3 hrs.  
A study of defect structure of solids, band theory of solids and variants, surface electronic states, semiconductors; preparation and properties, photoconductors; preparation and properties, luminescent materials; preparation and properties, magnetic properties of materials, soft magnetic materials; preparation and properties, diffusion in ionic materials.

CH 576. STATISTICAL THERMODYNAMICS 3 hrs.  
Classical and quantum statistical thermodynamics. Applications to physical chemical process. Offered second semester. Prerequisite CH 503.

CH 581. GENERAL SURFACE CHEMISTRY 3 hrs.  
A study of adsorption phenomena with particular reference to gas-solid, gas-liquid, and liquid-solid interactions.

CH 584. ADVANCED INORGANIC CHEMISTRY 3 hrs.  
Advanced quantum and statistical mechanics, bond theory and molecular structure, many electron problems, free electron theory, and band theory. Offered second semester.

CH 586. ORGANIC AND INORGANIC POLYMERS 3 hrs.  
Study of the structure and properties of polymers, including stereospecific polymers. Kinetics of polymer formation. Thermodynamics of polymers. Methods of determining molecular weights. Silicones and new materials formed from inorganic polymers. Ceramic fibres and filaments. Industrial applications of polymers. Offered second semester.

## CIVILIZATION

CIV 101 and 102. CIVILIZATION for Engineering and Science students\* 3 hrs.  
for Art students 6 hrs.

This course is an integration of the history of western civilization with the traditional freshman composition. Through concentration on a relatively few periods whose culture is judged to be of greatest significance, the course introduces the student to the basic patterns of social organization, intellectual activity, and artistic achievement. These materials form the basis of the work in composition. The course is conducted by a permanent teaching panel with occasional lectures given by representatives from the various departments of the University.  
Required of all freshmen in the College of Ceramics. Design students will take the entire course while Engineering and Technology students will take only the lectures in history.

## ART

DE 112. DRAWING 4 hrs.  
Free-hand drawing and design from still life, landscape, the figure and memory; all media used. Introductory work in color. Eight clock hours per week.

DE 111S. LIFE DRAWING-POTTERY 3 hrs.  
A course in drawing from life and pottery forming on the wheel. Class meets all day five days per week for a period of three weeks. This course is required of all students before admission to the sophomore year. Advanced students who have completed the course are invited to attend again each year at no extra cost. Intersession.

DE 122. SCULPTURE I 4 hrs.  
Exercises and creative experiments aimed at uncovering the structural and plastic limits and potentials of clay. Eight clock hours per week.

DE 131. VISUAL DESIGN I 4 hrs.  
A study of the basic vocabulary of two-dimensional design: point, line, texture, value and color. Application of this vocabulary in drawing and elementary design problems leading to an understanding of two-dimensional form and space. Eight clock hours per week.

\*These students also register for English 101-102.

DE 141. DIMENSIONAL DESIGN I 4 hrs.  
Exercises in three-dimensional design using a variety of materials. The student designs and constructs simple hand tools and utensils. Construction drawing. Eight clock hours per week.

DE 151-152. DESIGN SEMINAR each semester 1 hr.  
A series of consultations with professionals in the design field, interspersed with films, panel discussions and studio projects, arranged to acquaint the beginning student with eventual possibilities in his career.

DE 153-154. TECHNICAL DRAWING each semester 2 hrs.  
A study of the basic projection systems; orthographic and perspective. Problems include both freehand and instrument drawing. Special emphasis is put on the methods of representing 3-dimensional objects in space. Four clock hours per week.

DE 161-162. INTRODUCTION TO ART each semester 2 hrs.  
A review of painting, sculpture and architecture of the major cultures of the Western World from Ancient Egypt to the present. This course is a requirement for the Bachelor of Fine Arts degree and for Liberal Arts majors in fine arts. For Liberal Arts majors, additional work is required and three credit hours are allowed. Two lectures.

CH 205. CHEMISTRY one semester 3 hrs.  
A course in chemical principles, descriptive inorganic and organic chemistry, and chemical calculations for students in Ceramic Design. Three lectures and one three-hour laboratory period.

DE 211. PAINTING I 4 hrs.  
Plastic drawing and spatial organization, from still life, and landscape. All media used. Four clock hours per week.

DE 221. SCULPTURE II 2 hrs.  
Studies in recognition of the sculptural idea and the sources of visual energy in the sculptural statement. Modelled and constructed work in clay. Four clock hours per week.

DE 232. VISUAL DESIGN II 4 hrs.  
Continuation of 131. Introduction to typography, photomontage, and related exercises in drawing. The planning and organization of exhibitions. Four clock hours per week.

DE 241. DIMENSIONAL DESIGN II 2 hrs.  
The development of special knowledge and skills necessary to the solution of design problems. The study of structure. Design of small objects in wood, metal, glass, and other materials. The preparation of sections, profiles and models. Four clock hours per week.

DE 251-252. DRAWING each semester 1 hr.  
Techniques of structural drawing.

DE 261. MODERN ART I 2 hrs.  
Art from the French Revolution to the First World War. Required for graduation. (Elective for Liberal Arts students.) Two lectures.

DE 262. MODERN ART II 2 hrs.  
Art from World War I to the present. Required for graduation. Prerequisite De 261 or permission of instructor. (Elective for Liberal Arts students.) Two lectures.

DE 272. POTTERY—FORMING 4 hrs.  
Introduction to pottery forming. Exercises on the potter's wheel as a foundation for the development of skill in forming. This course is required of all students before admission to the junior year. Four clock hours per week.

DE 273. CERAMIC MATERIALS 3 hrs.  
A general course in ceramic raw materials. The origin and properties of clays and other materials used in pottery bodies. Laboratory exercises involving the use and properties of materials and development of pottery body compositions. Two lecture periods and one laboratory period. Offered second semester.

DE 274. GLAZE CALCULATIONS 3 hrs.  
A study of the composition properties and uses of materials used in glazes. Calculation of glaze formulas and batches. Laboratory exercises in the development of color and texture. Two lecture periods and one laboratory period.

DE 311-312. PAINTING II each semester 2-4 hrs.  
Creative organization of pattern, color, texture, and form in relation to a two-dimensional surface, decorative pattern for various materials and processes. All types of media used in this course. Four clock hours per week.

DE 321-322. SCULPTURE III each semester 2-4 hrs.  
Self-determined sculpture problems correlated with Courses 371 (Clay Forming) and 373 (Glaze Formulation). Area of concentration includes architectural ceramic applications and functions. Four clock hours per week.

DE 331-332. GRAPHICS I each semester 2-4 hrs.  
General survey of graphic methods. Introduction to elementary printing methods: stencil, type, monoprint. Investigation of the woodcut as a creative medium. Four clock hours per week.

DE 333-334. PHOTOGRAPHY I each semester 2 hrs.  
An introduction to the basic elements of photography. Fundamental camera and dark-room techniques will be studied. Emphasis is on photography as an interpretative medium. Enrollment is limited to ten students. Four clock hours per week.

DE 341-342. DIMENSIONAL DESIGN III each semester 2-4 hrs.  
Basic problems in design, stressing the influence of function, materials, methods of making, social and economic factors; problems in interior arrangement, furniture models and constructions. Selected problems are produced, full scale, in the final materials. Four clock hours per week.

DE 351-352. DRAWING each semester 1 hr.  
Analytical drawing. Analysis of natural forms and space. Graphic representation of ideas.

DE 353-354. ADVANCED TECHNICAL DRAWING each semester 2 hrs.  
A course in advanced perspective and architectural drawing tailored to the needs of the individual student. Additional credit by arrangement with instructor.

DE 361. ANCIENT ART 3 hrs.  
The art of Egypt and the Ancient Near East. Three lectures.

DE 362. CLASSICAL ART 3 hrs.  
A detailed study of selected aspects of Greek and Roman Art. Three lectures.

DE 363. MEDIEVAL ART 3 hrs.  
Art from the rise of Christianity to the fall of Constantinople. Three lectures.

DE 364. RENAISSANCE ART 3 hrs.  
Art in Italy from c. 1400 to c. 1550. Three lectures.

DE 365. ORIENTAL ART 3 hrs.  
Painting, sculpture and pottery of India, China and Japan: A survey of the arts in relation to the religion and culture of these countries. Three lectures.

DE 366. HISTORY OF POTTERY 3 hrs.  
A survey of pottery styles of the great cultures including the history of body and glaze materials, forming, kilns and decorative styles. Problems of the evaluation of pots will also be considered. Three lectures.

DE 371. POTTERY—FORMING 4 hrs.  
Exercises in forming pottery. Thrown and pressed ware. Required for graduation. Four clock hours per week.

DE 372. POTTERY—FORMING 4 hrs.  
A general course in pottery design and production. Creative use of clays and glazes; ceramic colors and textures. Molds and models. Firing practice. Required for graduation. Twelve clock hours per week. Offered second semester.

DE 411-412. PAINTING III each semester 2-8 hrs.  
An advanced course in painting and drawing—all media used. Four clock hours per week.

DE 421-422. SCULPTURE IV each semester 2-8 hrs.  
Advanced sculpture problems in the organization of ceramic elements and welded metal elements. Enrollment in this course is limited to six students. Four clock hours per week.

DE 431-432. GRAPHICS II each semester 2-8 hrs.  
Advanced application of graphic methods learned in 331. Problems in visual design (book illustration, exhibition, the series) will be arranged individually with the student. Four clock hours per week.

DE 433-434. PHOTOGRAPHY II each semester 2 hrs.  
Advanced work in photography. Four clock hours per week.

DE 441-442. DIMENSIONAL DESIGN IV each semester 2-8 hrs.  
An advanced course in drawing and three dimensional design problems, planned individually with each student. Four clock hours per week.

DE 450. INDEPENDENT STUDY  
A course of independent study under direction of the design staff. Hours and credit to be arranged with the Chairman of the department.

DE 451-452. DRAWING each semester 1 hr.  
Drawing and color; exploration of drawing as a free art form.

\*DE 461-462. THEORIES OF ART each semester 2 hrs.  
A study of the principal theories of the nature and function of Art from the Greeks to the Renaissance and from the Baroque to the present. A critical examination will be made of significant texts and documents. Required for the Master of Fine Arts degree and open to undergraduates with permission of the instructor. Two lectures.

DE 471-472. POTTERY each semester 2-8 hrs.  
Problems in the design of pottery, tableware, and glass products. Individual problems including various methods of forming and types of market requirements; survey of history of ceramics. Required for graduation. Eight clock hours per week.

DE 474. ADVANCED GLAZE THEORY each semester 2 hrs.  
A broad study of glaze structure and color, the preparation of glaze stains, and the diagnosis and correction of glaze faults throughout the available temperature range. Four clock hours per week.

DE 475G. ADVANCED CERAMIC MATERIALS AND CALCULATIONS 4 hrs.  
A study of the new scientific theories of the structure of matter and ceramic processes from clay-water systems to glasses and glazes. Two lecture periods and one laboratory period per week.

\*DE 476. KILN DESIGN 2 hrs.  
A basic study of fuels, refractories, combustion, and firing techniques for basic kiln types. The cost estimates and designs for one or more kilns will be evolved through orthographic projection, detailed working drawings, and materials specification sheets. Required for Master of Fine Arts degree. Four clock hours per week.

DE 480. ART METHODS AND MATERIALS 4 hrs.  
A laboratory and study course preparing those students interested in teacher certification for the following semester's practice teaching.

GRADUATE COURSES (GENERAL)  
Hours and credits for graduate courses are arranged individually with each student. Graduate students are generally enrolled in regular undergraduate courses, and as the work of each student reaches an approved level, an individual program is prescribed and graduate credit is allowed.

\*May be taken for graduate credit.

**DE 550. INDEPENDENT STUDY**

A course in independent study under the direction of the design staff. Hours and credit to be arranged with the Chairman of the department.

**DE 561-562. GRADUATE SEMINAR**

Required for the M.F.A. degree. Hours to be arranged.

**DE 564. GRADUATE THESIS**

A summing up on an intellectual and philosophical level of the candidate's thoughts about his work. Correlated to courses DE 573 and 574 and DE 561 and 562.

**DE 571-572. ADVANCED POTTERY**

each semester 2 hrs.

Advanced problems in Ceramic Design.

**DE 573-574. GRADUATE PROJECT**

In this course each graduate student selects and carries to completion an advanced problem or project in ceramics or design. The subject of the project is selected jointly with the faculty and is based upon the student's interests and aptitudes as evidenced by his previous performance in all courses. When completed and submitted in an approved form the graduate project may be considered in support of the student's application for the Master of Fine Arts degree.

**DE 573A. DESIGN—PROFESSIONAL PRACTICE. (Elective)**

This is a supervised off-campus work period in the design laboratory of an industrial plant.

**DE 574S. GRADUATE PROJECT**

A development of DE 574. Hours to be arranged.

**DE 575 and 576. RESEARCH**

A program of study, exploratory in nature, under the guidance of the design staff. When completed and approved, it may be considered as in support of the graduate's application for the M.F.A. degree.

**DE 576S. GRADUATE RESEARCH**

A development of DE 576. Hours to be arranged.

**EARTH SCIENCE**

**GEOL. 206. STRUCTURAL**

3 hrs.

A survey of physical and engineering geology emphasizing earth materials, economic deposits, and their origin. Three lectures. Offered second semester.

**\*EM 412. ELECTRON MICROSCOPY**

3 hrs.

Operation of the electron microscope for optical and electron diffraction studies. Applications and specimen preparation techniques. Two lectures and two laboratory periods. Offered second semester.

**MIN 201. MINERALOGY**

3 hrs.

Introduction to crystallography and crystal chemistry and the study of minerals and their concentration and identification by chemical and physical methods. Two lectures and one laboratory period.

**MIN 401. SILICATE MELT SYSTEMS**

2 hrs.

Application of thermodynamic principles to the crystallization of silicate melts. Equilibrium and non-equilibrium processes; effects of volatile and trace components and of high pressures. Emphasis on naturally occurring systems, origin of igneous rocks, and experimental petrology. Prerequisite CE 437 or equivalent.

**MIN 508. CLAY MINERALOGY**

3 hrs.

Crystalline structure, methods of analysis and genesis of clay minerals. The surface chemistry of solids and a structure theory of water will be studied in connection with advanced work on claywater systems. Three lectures. Offered second semester.

**MIN 512. GEOCHEMISTRY**

3 hrs.

A survey of the chemistry and physical chemistry of the earth, including the origin and abundance of the elements; structure, composition and age of the earth; differentiation of silicate melts; physical chemistry of sedimentation; trace element distribution and ore deposits. Prerequisites CH 342 and GEOL. 206.

**MIN 513. ADVANCED GEOCHEMISTRY**

2 hrs.

Selected topics in the application of chemistry to geological problems. The thermodynamics of metamorphism; metasomatism and diffusion phenomena; distribution and fractionation of isotopes in nature; age determination by radioactive decay. Prerequisite MIN 512.

**PET 302. PETROGRAPHY**

3 hrs.

Petrographic microscopy, including optical mineralogy; linear, point, and counting methods for quantitative analysis of mineral mixtures; particle size distribution; thin sections, polished sections, and immersed grains. Two lectures and one laboratory period. Offered second semester.

**\*PET 401. ADVANCED PETROGRAPHY**

Advanced work in the use of the petrographic and metalographic microscopes and accessories in the examination and photography of ceramic raw materials and products. One laboratory period. Offered first semester. Prerequisite PET 302.

**\*X-RAYS 411. APPLIED X-RAYS**

2 hrs.

Basic x-ray physics, x-ray crystallography and applications of x-ray diffraction to the study of solids. Applications include the powder methods, single crystal methods, and an introduction to crystal structure analysis. Two lectures. Offered first semester.

**\*X-RAYS 411L. APPLIED X-RAY LABORATORY**

1 hr.

Experiments on x-ray diffraction methods including various powder techniques, determination of polycrystalline and single-crystal orientation, particle-size analysis, indexing patterns, and single-crystal rotation method. One laboratory. Offered first semester.

## ECONOMICS

ECON 211–212. PRINCIPLES AND PROBLEMS OF ECONOMICS. (L.A. College)  
each semester 3 hrs.

A study of modern economic society, its organization, operation, and control. Not open to first year students.

## ENGINEERING GRAPHICS

EG 101–102. ENGINEERING GRAPHICS each semester 2 hrs.  
The fundamental principles of drafting, descriptive geometry, and graphical presentations are studied both freehand and with instruments.

EG 111 and 112. ENGINEERING DRAWING AND ELEMENTARY PERSPECTIVE  
PROJECTION each semester 2 hrs.  
The fundamental principles of drafting and elementary problems in descriptive geometry with work in basic problems in the various perspective systems of representing lines, planes, and solids in space—for Ceramic Design students—with and without instruments. Four clock hours per week.

EG 313 and 314. ADVANCED DRAFTING each semester 2 hrs.  
Technical or architectural drawing. Prerequisite EG 101–102 or EG 111 and 112.

## ENGLISH

ENG 101–102. ENGLISH COMPOSITION each semester 3 hrs.  
The study and application of basic principles of verbal communication; correctness, clarity, concreteness, and effective organization.

ENG 223 and 224. READINGS IN MODERN LITERATURE each semester 3 hrs.  
Readings in 20th century fiction, drama, and poetry. The aim of the course is to help students who are specializing in non-literary fields of study to read with understanding and enjoyment the worthwhile literature of their own time.

ENG 335. TECHNICAL WRITING 2 hrs.  
Practice in routine business correspondence followed by a study of the engineering report, technical article, and research paper.

## GLASS SCIENCE

GL 202. GLASS CHEMISTRY 4 hrs.  
The chemistry of glass materials. Batch calculations. Glass compositions. Glass analysis. Melting reactions. Introduction to glass manufacture, melting, and forming.

GL 253–254. GLASS LABORATORY  
Analysis of glass and glass materials—determination of silica,  $R_2O_3$  group, lime, magnesia, alkalis, iron, boron, fluorine,  $TiO_2$ , etc. in glass. (We shall not be able to do all of these determinations, but the order is indicated).

GL 301. GLASS MANUFACTURE 5 hrs.  
The glass melting process is studied in relation to refractories, containers, temperatures, and fining agents. Text and references to the literature of glass, covering glass composition, furnace design and operation, tank blocks and parts, and fundamental chemistry of glassmaking, working processes, annealing, finishing, defects and testing of commercial glassware. In the laboratory, experiments on melting and forming of various glasses, and on measurement of density, softness, annealing and strain points, chemical durability, stress optical constant, and other properties of glass will be carried out. With the permission of the instructor, the lectures may be taken as a three-hour course without the laboratory. Three lectures, two laboratory periods. Offered first semester. Prerequisites Glass 202. (Under some circumstances, Ceramics 206 may be accepted if an honor grade A or B has been obtained in Chemistry 215.) Physics 211 and 212.

GL 302. PROPERTIES I 5 hrs.  
The properties of glass are studied with particular attention to methods of measurement. Density, thermal expansion, viscosity, surface tension, and the stress—optical properties are covered. The calculation of properties from composition, annealing, measurement of strain and heat shock resistance are treated mathematically. Laboratory is a continuation of the laboratory of GL 301. Three lectures, two laboratories. Prerequisite GL 202, Mathematics 219, CH 244. To be taken with PET 302.

GL 381. PLANT INSPECTION 0 hr.  
Visits to glass factories arranged during the first semester. One week away from Alfred. Prerequisites GL 301 and 302.

\*GL 403. PROPERTIES II 3 hrs.  
Text, lectures, assigned reading, individual reports on research papers. The physical chemical, and optical properties of glass are intensively studied. Three lectures. Offered first semester. Prerequisite GL 301, 302.

GL 404. GLASS-MELTING UNITS 3 hrs.  
Studies on the design, construction, and operation of glass furnaces. Thermal efficiency, heat economy, and application of electric energy are considered. Two lecture hours, one laboratory period. Prerequisites GL 301, 302, 403, CH 343, CE 431.

\*May be taken for graduate credit.

**\*GL 405. GLASS ENGINEERING** 2 hrs.  
Three credit hours may be given for special assignment. The application of glass in industrial practice. The design of windows, insulating walls, pipe lines, boiler gauges, electrical insulators, lead in seals, heat exchangers, illuminating fixtures, color filters, and lenses may be treated. Use of Fortran programs in solving engineering problems is stressed. Two lectures. Offered first semester. Prerequisites GL 302, Physics 337-338.

**\*GL 406. STRUCTURE OF GLASS** 2 hrs.  
Three credit hours may be given for special assignment. Primarily for graduate students. A lecture course dealing with the coordination and linkage of cations and oxygen in the glass-forming, glass-modifying, and intermediate oxides, from the viewpoint of crystal chemistry. Two lectures. Offered second semester.

**\*GL 408. MATERIALS OF GLASS MANUFACTURE** 3 hrs.  
The properties, functions, thermal behavior, and applications of various materials used in the manufacture of glass and ceramic products are considered from the concept of the glassy and crystalline states. Occurrence, evaluation, recovery, and beneficiation of the basic materials are studied. Particular emphasis is placed on the role of thermal behavior in glasses and glassy ceramics. Selection of proper materials is also emphasized. Methods of testing purity and avoidance of impurities are stressed. The chemical toxicity of various raw materials is pointed out, and methods of safe handling are recommended.

**\*GL 410. GLASS-METAL SEALS** 2 hrs.  
Special problems encountered in fabrication of glass-metal seals. Prerequisite GL 302.

**GL 461-462. GLASS THESIS** each semester 2 hrs.  
Laboratory study of a problem selected in conference with the department head. Review of literature. Two laboratory periods.

**\*GL 471-472. GLASS SEMINAR** each semester 1 hr.  
Oral reports on advances in glass technology from current literature. Required of all senior glass students, including graduate students. A written pertinent composition is required for graduate credit. Must be repeated by 5-year students. One hour.

**GL 590. THE VITREOUS STATE** First Semester  
For Graduate Students. The composition, structure and energetics of the non crystalline solid state. Two lectures.

INDUSTRIAL MECHANICS, See Engineering Graphics

## MATHEMATICS

**MA 117. ANALYTIC GEOMETRY WITH ELEMENTARY LINEAR ALGEBRA** 3 hrs.  
An introduction to sets, functions, vectors, matrices, determinants, and analytic geometry.

\*May be taken for graduate credit.

**MA 108. THE NATURE AND SIGNIFICANCE OF MATHEMATICS** 3 hrs.  
Primarily for the non-science student, the topics treated will be chosen for the light they shed on the nature and significance of mathematics, and may include topology, finite and infinite sets, properties of mathematics systems, and readings in the history and philosophy of mathematics.

**MA 118. ELEMENTARY PROBABILITY AND STATISTICS** 3 hrs.  
An introduction to probability and statistics with applications in the behavioral and physical sciences. Prerequisite Mathematics 117.

**MA 218. CALCULUS** 4 hrs.  
The first semester of calculus includes the differentiation and integration of algebraic and transcendental functions. Prerequisite Mathematics 117.

**MA 219. CALCULUS** 4 hrs.  
The second semester of calculus includes arc length, an introduction to infinite series, multiple integrals, and partial differentiation. Prerequisite Mathematics 218.

**MA 322. MODERN ALGEBRA** 3 hrs.  
An introduction to modern abstract algebra through a study of groups, rings, ideals, integral domains, fields, and number theory. Prerequisite permission of the instructor.

**MA 372. DIFFERENTIAL EQUATIONS** 4 hrs.  
The study of first and second degree differential equations and partial differential equations with applications to the sciences. Prerequisite Mathematics 219.

**MA 445-446. LINEAR ALGEBRA** each semester 3 hrs.  
Linear Algebra is a study of linear transformations and matrices. Prerequisite permission of the instructor.

**MA 465. PROBABILITY** 3 hrs.  
This course provides an introduction to the theory and applications of probability. Prerequisite Mathematics 218.

**MA 466. MATHEMATICAL STATISTICS** 3 hrs.  
The distribution of various statistics are studied, followed by estimation theory, decision theory, and analysis of variance. Prerequisite Mathematics 465.

**MA 467-468. ADVANCED CALCULUS** each semester 3 hrs.  
This course is designed to train the student in mathematical rigor. It is a supplementary study of calculus with emphasis on the axiomatic foundation of analysis plus the study of partial differentiation, infinite series, improper integrals, line integrals, and surface integrals. Prerequisite Mathematics 219.

**MA 501. VECTOR ANALYSIS** 3 hrs.  
A study of basic algebraic operations on vectors, vector differentiation, and vector integration including divergence, curl, curvilinear coordinates, line and surface integrals, gradients and potentials, with applications in scientific areas. Offered first semester. Prerequisite three hours of Advanced Calculus, or consent of instructor.



### MA 503. APPLIED MATHEMATICS

3 hrs.

Content of course varies according to the needs of the students. Topics may include infinite series, Fourier series and orthogonal functions, special partial differential equations, Laplace and Fourier transforms, and items from Higher Algebra and Complex Variables. Prerequisite three hours of Advanced Calculus and three hours of Differential Equations.

### MA 504. THEORY OF FUNCTIONS OF A COMPLEX VARIABLE

3 hrs.

A standard one-semester course, including complex integrals, Cauchy's formulae, analytic continuation, Taylor and Laurent expansions, and residues. Prerequisite consent of instructor.

### MA 505. PARTIAL DIFFERENTIAL EQUATIONS

3 hrs.

Origins and formal methods of solution of the familiar partial differential equations, including the wave equation, equation of heat flow and diffusion, Sturm-Liouville systems, and the equations of Bessel, Legendre, Hermite, and Laguerre. Properties of the solutions. Methods of Charpit, Jacobi, and Monge. Prerequisite three hours of Differential Equations.

## MILITARY SCIENCE

### *Reserve Officers' Training Corps*

An Army Senior Division Reserve Officers' Training Corps Program is offered at Alfred University. Military Science is a regular college course for which the student receives academic credit toward a bachelor's degree.

Instruction in this department is designed with a two-fold purpose: first, to assist in training young men in the principles of leadership and to inculcate habits of loyalty, self-control, and obedience to proper authority; second, to prepare students to qualify for a Commission in the United States Army Reserve while they are pursuing a regular academic course of instruction. In the event of a national emergency this training enables students to perform military duties in the service of their country with a rank and position commensurate with their capabilities and training as college graduates.

*General Conditions.* All students who enroll in the Basic Course must be citizens of the United States.

be physically qualified under standards prescribed by the Department of the Army.

be regularly enrolled students in Alfred University.

not be less than 14 or more than 23 years old.

*The Two-Year Basic Course* which meets three hours each week is given during the freshman and sophomore years and is required of all physically fit, non-veteran, male students. Credit for all or a part of the Basic Course may be granted by the Professor of Military Science to properly qualified applicants who have had prior service in the Armed Forces, or prior training at one of the Service Academies, or in Senior Division Army ROTC, Air Force ROTC, or Naval ROTC. The amount of credit granted is at the

discretion of the Professor of Military Science. One hour credit each semester may be earned. All incoming freshmen, who have had band experience, are required to audition for possible participation in the Alfred University ROTC Band organization.

*The Two-Year Advanced Course* which meets three hours each week in the first semester and four hours each week in the second semester is offered to eligible juniors and seniors. In general, students selected for the Advanced Course are those who have demonstrated ability and aptitude for military service. The Advanced Course student, through direct supervision over Basic Course students, is given ample opportunity to develop in leadership and exercise of command, a necessary factor in the development of well-rounded army officers and leaders in civilian life. A summer camp period of six weeks' duration, normally between the first and second year of the Advanced Course, is an integral part of the program. Three credit hours each semester may be earned.

All students accepted for enrollment in the Advanced Course of instruction must not have reached 26 years of age at the time of initial enrollment in the Advanced Course.

apply for and be approved by the Professor of Military Science and the University officials.

successfully pass the prescribed physical examination.

have completed appropriate Basic Course training or have received equivalent credit in lieu thereof.

execute a written agreement with the Government to complete the Advanced Course Training, to attend one summer camp of six weeks' duration, and to accept a commission as a second lieutenant in the U.S. Army Reserve.

Advanced Course students must successfully complete three credit hours of free electives per year outside of their chosen field of specialization in the Junior and Senior years. The six credit hours may be chosen from certain courses offered by the Colleges of Liberal Arts and Ceramics and are intended to broaden further the academic base of the future officer. In most instances the free electives specified in a student's particular degree program will satisfy this requirement.

The Professor of Military Science, in cooperation with the President of the University, may recommend Distinguished Military Graduates for a commission in the Regular Army of the United States.

Uniforms, textbooks, and equipment are provided on a loan basis for student use. These items of issue remain the property of the United States Government, and in the event any item is lost, damaged, or destroyed through the fault or neglect of the student, he may be required to pay for it. The uniform will be worn on Mondays, during scheduled military drill hours, and at such other times as the Professor of Military Science may direct.

Students enrolled in the Advanced Course are paid a monetary subsistence allowance which currently amounts to approximately \$40.00 a month for a period not to exceed 20 months during the Advanced Course. While the student is attending the summer camp, the Government defrays all expense for food, clothing, quarters, and

authorizes payment of six cents a mile for travel expenses to the summer camp station and return. In addition, all students attending summer camp receive the pay of a West Point Cadet during the camp period. Total pay and allowances during the advanced course amount to more than \$975.00.

111 and 112. FIRST YEAR BASIC COURSE each semester 1 hr.

221 and 222. SECOND YEAR BASIC COURSE each semester 1 hr.  
Prerequisite completion of MS 111 and 112.

331–332. FIRST YEAR ADVANCED COURSE each semester 3 hrs.  
Prerequisite successful completion of the Two-Year Basic Course, or equivalent.

441–442. SECOND YEAR ADVANCED COURSE each semester 3 hrs.  
Prerequisite successful completion of MS 331–332.

## PHYSICAL EDUCATION

PE 101 and 102. PHYSICAL EDUCATION each semester 1 hr.

PE 203 and 204. PHYSICAL EDUCATION each semester 1 hr.

## PHYSICS

Physics 211–212. GENERAL PHYSICS each semester 4 hrs.  
A study of the fundamental principles of physics, covering the fields of mechanics, heat, sound, electricity, magnetism, light, and atomic physics. Calculus is employed. Math 117 and 218 are prerequisites. This course is prerequisite for all physics courses numbered 300 and above.

Note: Ceramic students will normally register for 211E–212E.

Physics 337–338. MECHANICS AND STRENGTH OF MATERIALS each semester 4 hrs.

A more detailed treatment of the statics and dynamics of particles and rigid bodies than is possible in Physics 211–212, and a study of deformable bodies, including such topics as stress and strain, torsion and bending, and columns.

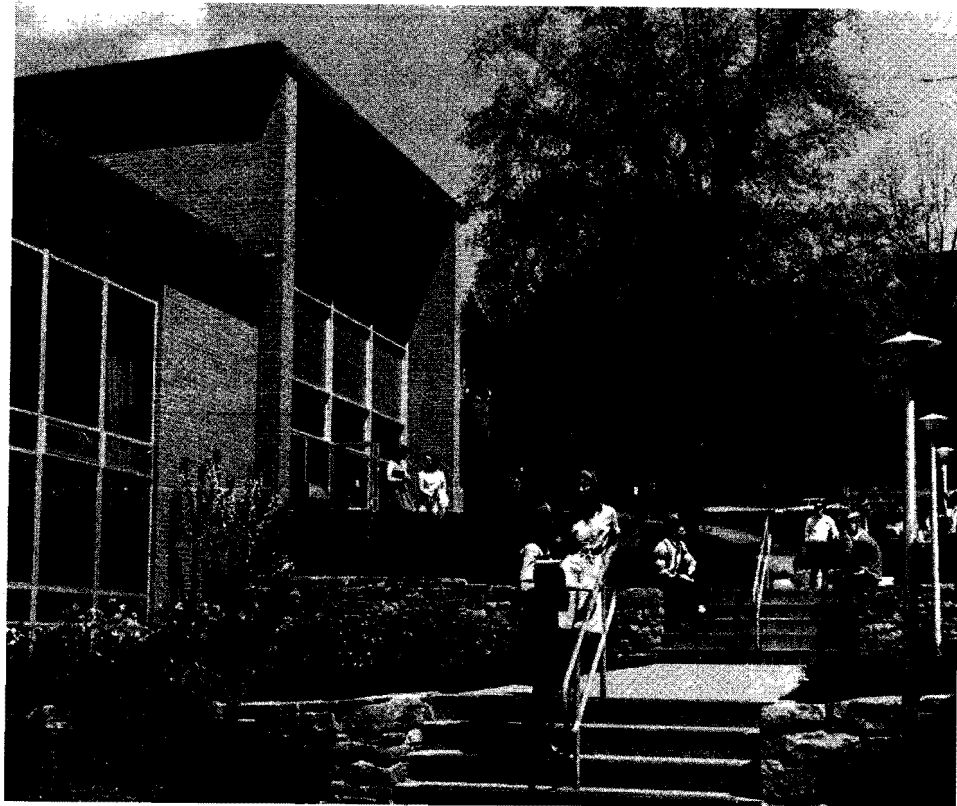
PH 511. SOLID STATE PHYSICS first semester 3 hrs.  
Application of fundamental principles to a study of the electrical and magnetic properties of matter. Theory of dielectrics from an atomic point of view. Behavior of induced and permanent dipoles in electric fields. Dipole, atomic and electronic polarization. Dependence of dielectric constant and index of refraction on temperature and frequency. Ferroelectricity. Dia-, para- and ferro-magnetism. Three lectures per week, first semester. Permission of instructor required.

PH 512. SOLID STATE PHYSICS (continued) second semester 3 hrs.  
A physical approach to the study of the nature of bonding in solids, from both the classical and wave-mechanical points of view. Theory of electrical conductivity and specific heat. Insulators, semi-conductors, and conductors. Three lectures. Offered second semester. Permission of instructor required.

PH 541. MODERN PHYSICS 3 hrs.  
Matter and fields, special relativity, quantum theory, atomic and nuclear spectroscopy, fundamentals of classical and quantum statistics. Emphasis on experiments from which existence and properties of atoms and subatomic particles are inferred.

PH 543–544. ADVANCED SOLID STATE PHYSICS each semester 3 hrs.  
Various topics in the theory of solids, including binding energies, specific heats, the free-electron theory, the band approximation, magnetic properties, semiconductivity, and dielectric properties. Quantum mechanics is introduced at the beginning and used throughout the course. Prerequisite PH 441.

## CAMPUS LIFE



Campus life has as its core, the academic program. From this core a variety of planned co-curricular activities develop, primarily in the areas of recreation and athletics, dramatics, music, and student government. In addition, there are other areas of activity such as departmental clubs and organizations, fraternities and sororities, which also serve to help each student to become a member of the University community.

### ORIENTATION

Orientation week in September introduces the freshman student to the academic and social traditions of the University. During the orientation period the student begins to experience one of the most significant traditions: the friendly relationship between student and teacher. The program includes individual testing, becoming acquainted with fellow-students and Alfred activities, meeting with Deans and faculty advisors, and registering for courses.

After the first day of class, orientation expands into a broader education. Formal instruction in the classroom is supplemented with individual conferences with teachers or with gatherings at faculty homes. Formally and informally, the student will find mature and friendly assistance ever-present.

### STUDENT PERSONNEL SERVICE

The Dean of Students, Associate Dean of Students, and the Assistant Dean of Students strive to meet the social, personal, and educational needs of the resident and commuting students by directing them toward a comprehensive student life program. They are responsible for freshman orientation, student housing and activities,

job placement, and Selective Service and foreign student advising. They also work cooperatively with the University Counselor. Every effort is made to assist all students in achieving the greatest possible benefit from membership in the University community.

#### VOCATIONAL GUIDANCE AND PLACEMENT

Placement is effected through the cooperation of the Personnel Deans, the Department Chairmen, and the Academic Deans. The Personnel Deans and Department Chairmen schedule campus visits of personnel officers from business and industry. The Chairman of the Department of Education aids prospective teachers, teachers in service, and school administrators with placement problems. The academic Deans take particular interest in the placement of students in the graduate schools.

Although vocational guidance is given and placement contacts arranged, employment is not guaranteed.

#### CAMPUS HOUSING

Alfred University is a residential university operating nine residence halls and two dining halls. All freshmen and sophomores are required to room and board in university residence halls: The Brick, Kruson, Sayles Street Residence, and the Castle for women; Barresi, Bartlett, Cannon, Reimer, and South residence halls for men.

Junior and senior women reside in either sorority houses or University residence halls. Upperclasswomen may live at The Castle, a cooperative residence. Junior and senior men may reside in fraternities, University residence halls, or private homes which meet University standards. In all instances, the right of assignment to housing rests with University officials.

Married students are usually housed at Saxon Heights, located about three-quarters of a mile from the center of the campus. Applications for these apartments should be made to the Dean of Students. In general, married undergraduate women are not housed in University dormitories. (Please see University Regulations)

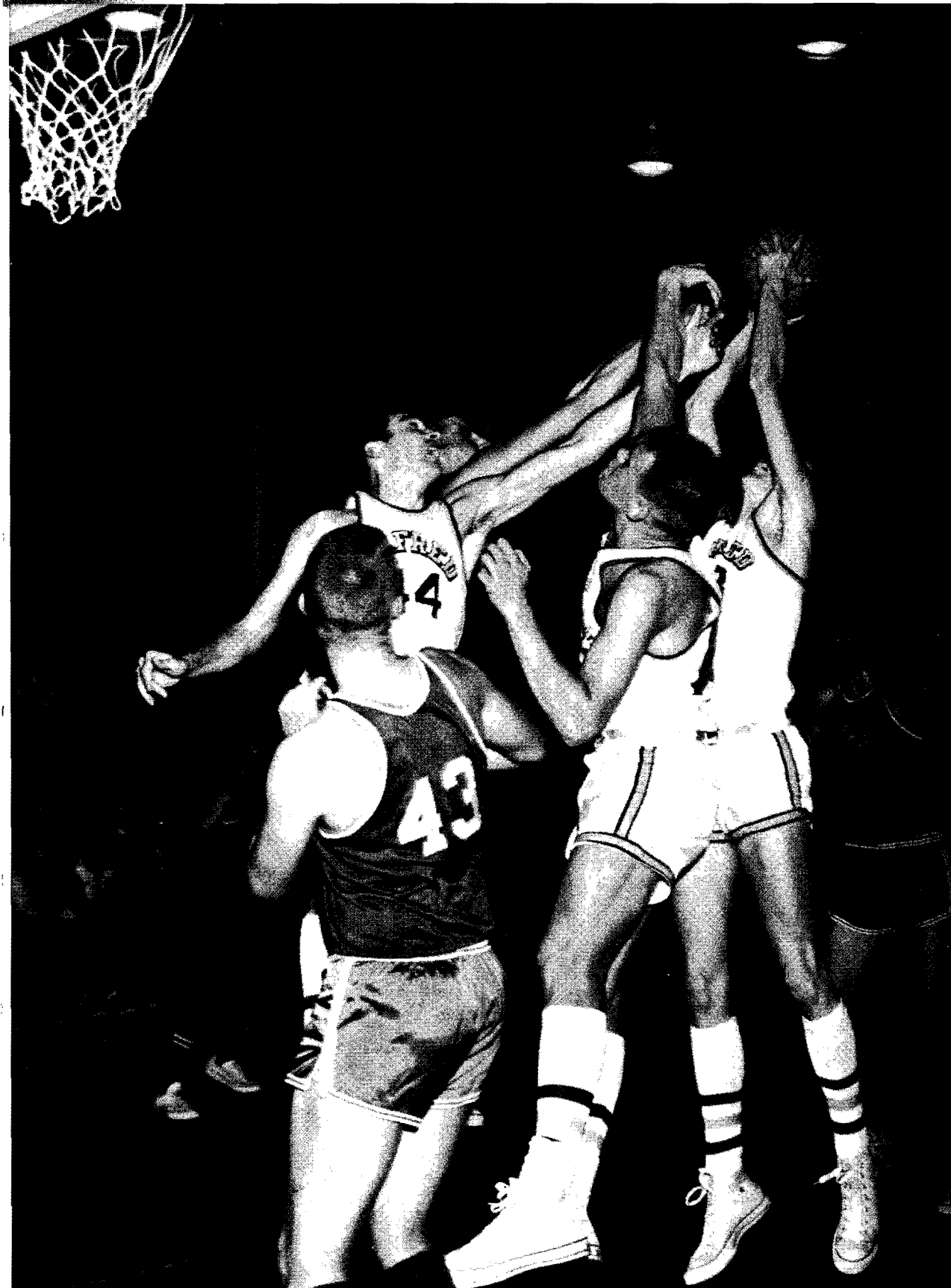
The Personnel Deans, the University Treasurer, and the Director of Dormitories and Dining Halls are responsible for resident student life, food service, and maintenance-housekeeping. A Head Resident is directly in charge of each dormitory and is assisted by competent student counselors. These staff specialists work together with elected student officers in residence to make learning through living an enjoyable and educational experience.

#### STUDENT GOVERNMENT

Student government is centered in the Student Senate. Matters of particular concern for women are centered in the Women's Student Government. Women's residence hall councils serve in a minor judicial and legislative capacity by virtue of authority delegated by the Women's Student Government.

#### THE ORGANIZATIONS

*Student Senate*, a general administrative and legislative body composed of representatives from organized campus groups.





*Interfraternity Council (IFC)*, composed of members from each fraternity, coordinates fraternity activities, aims to maintain high quality in fraternity life and interfraternity relations, to further intellectual accomplishment and sound scholarship.

*Intersorority Council (ISC)*, composed of members from each sorority, aims to maintain high quality in sorority life and intersorority relations, to further intellectual accomplishment and sound scholarship.

*Women's Student Government (WSG)*, regulates the general conduct and hours of University women through a system of rules made by elected representatives.

*Campus Center Board*, an elected student board, plans recreational, social, and cultural activities for the Campus Center.

*St. Pat's Board*, composed of elected junior and senior students in the College of Ceramics, coordinates the activities of the annual St. Pat's Festival.

#### ACTIVITIES: Athletics

*Men's Athletics* provide an opportunity for participation in the following intercollegiate sports: football, crosscountry, soccer, indoor and outdoor track, basketball, wrestling, tennis, lacrosse, golf, and rifle shooting. Other sports include fencing, badminton, archery, skiing, and tobogganing.

*Men's Athletic Governing Board* supervises and approves all the intercollegiate contests and elects the managers and assistants in all sports.

*Men's Intramural Board* coordinates the intramural athletic program.

*Women's Athletic Governing Board* promotes and supervises all sports for women which include tournaments in archery, badminton, basketball, fencing, field hockey, rifle-shooting, softball, table tennis, tennis, and volleyball.

#### PUBLICATIONS

*Alfred Review* represents the literary efforts of the students and faculty.

*Fiat Lux*, "The Fiat", is the campus weekly newspaper which has consistently earned high ratings among the college and university publications of the Intercollegiate Association.

*Kanakadea* is the University yearbook.

#### CLUBS

The following organizations are open to interested students:

##### Departmental

*Alfred Business Club*

*Psychology Club*

*El Centro Ibero Americano*

*Zeno Math Club*

*Political Science Club*

### Interest

*Alfred University Fine Arts Association* aims to stimulate a professional attitude on the part of students through exhibitions of their works, guest speakers, and exchange of programs with other universities.

*Eyes Right Club*, a social organization of ROTC, is restricted to Advanced Course Cadets.

*Footlight Club* promotes the best in dramatic production. Its members are chosen for their ability in dramatics or stage production.

*International Club* fosters international relations, creates understanding of various national groups, and acquaints foreign students with other students and faculty members. The Club is open to all students and faculty.

*The Ski Club* promotes trips and activities related to skiing.

*The R.O.T.C. Military Band* is composed of freshmen and sophomores of the R.O.T.C. and plays for military reviews and football games.

*Varsity A Club* aims to promote true fellowship among athletes and to encourage athletics on campus. It is composed of those athletes who have received certificates and Varsity "A" sweaters for their participation in varsity athletics.

### CHAPTER ORGANIZATIONS

*American Ceramic Society*. The Alfred branch of the American Ceramic Society—a professional organization of ceramic engineers, ceramic technologists, and glass technologists—strives to promote a better understanding of ceramics and associated industries. The programs of the society are designed to supplement the academic curriculum.

*American Chemical Society*. The Student Affiliates of the American Chemical Society, formed in 1957, are a group of students interested in various aspects of chemistry, who present lectures, films, and discussions to promote a better understanding of chemistry.

### HONORARY AND SERVICE SOCIETIES

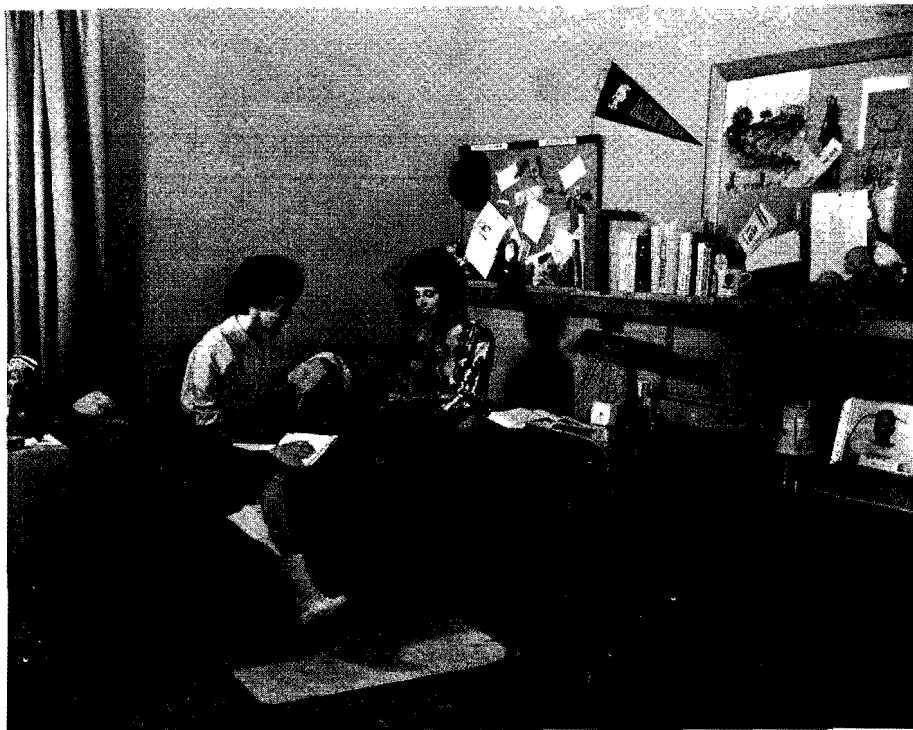
*Alpha Lambda Delta* (1954)—national honor society encouraging superior scholastic attainment among freshman women. Membership is composed of freshman women who attain a 3.5 index.

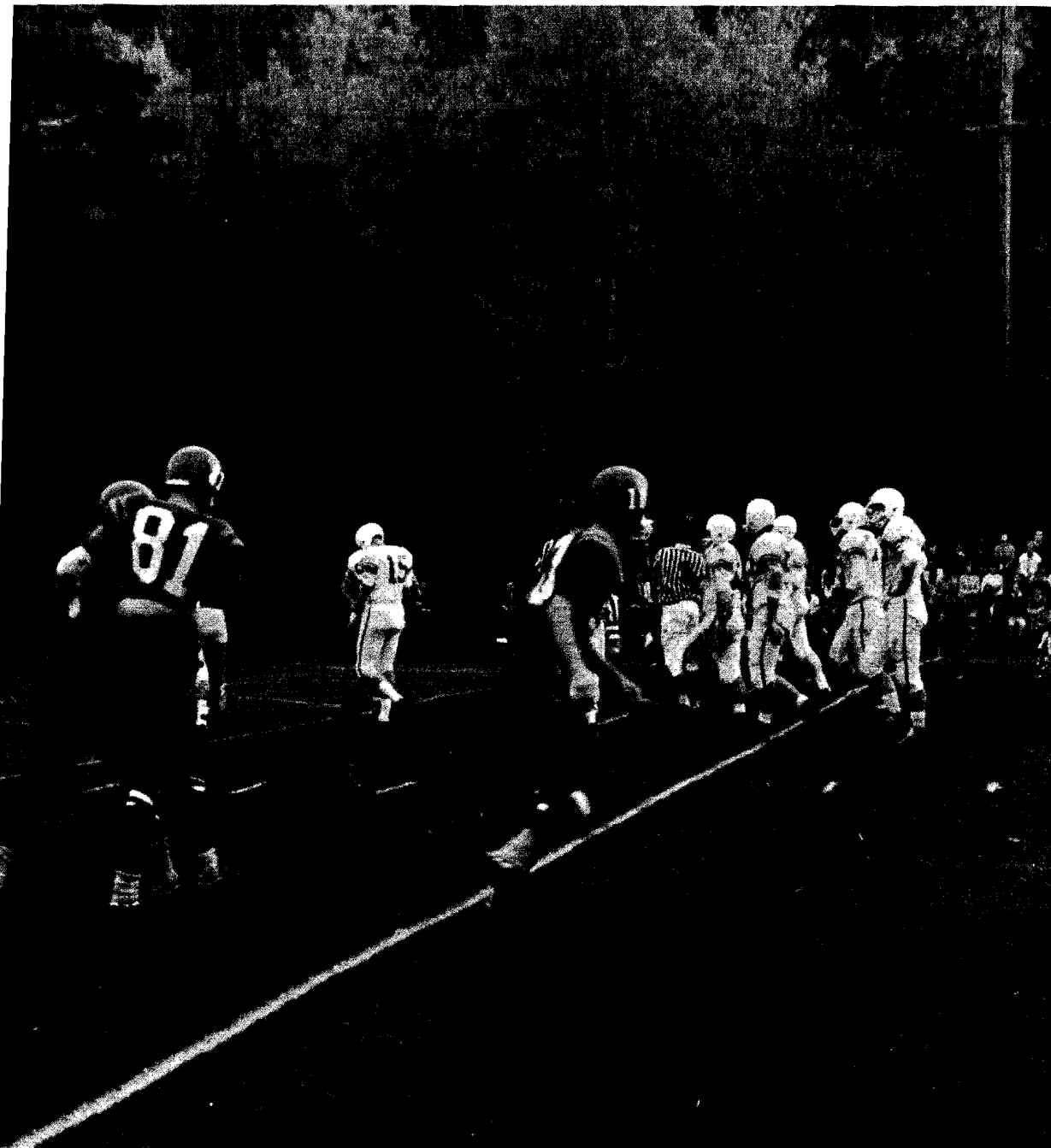
*Alpha Phi Omega* (1946)—national service fraternity, composed chiefly of ex-scouts; develops in its members leadership and friendship through service to campus, community, and the scouting movement.

*Alpha Tau Theta* (1930)—honorary athletic society for women, aims to develop loyalty to the ideals of true sportsmanship and to recognize achievements in sports.









*Blue Key* (1936)—a national honorary fraternity of upperclassmen recognized for their character, scholarship, leadership, activities, and service on campus.

*Cwens* (1959)—a national honorary society for sophomore women who have had a 3.0 index and have been leaders in their freshman year.

*Gold Key* (1959)—an honorary society for senior women, recognized for their academic achievements and extra-curricular activities.

*Keramos* (1932)—the national professional engineering fraternity. It is composed of students from all ceramic schools and men particularly prominent in the field of ceramics. Its principal objectives are to promote and emphasize scholarship and character, to stimulate mental achievement, and to develop interest in ceramic engineering. Membership is based on scholastic record and interest in ceramics.

*Pi Delta Epsilon* (1943)—the national honorary journalism fraternity. Members are selected after having served two years on a campus publication and shown outstanding ability, generally in an editorial capacity.

*Pi Gamma Mu* (1927)—a national honorary social science fraternity composed of faculty members and upperclassmen who must have an index of 3.0 and 20 hours in the social sciences.

#### SPECIAL CAMPUS FEATURES AND PROGRAMS

*Assemblies*, held weekly and required for freshmen and sophomores, present campus news, special lectures and cultural programs

*Campus Center* unites the social and the cultural activities of students. The Student Board of Managers and the Staff Director provide a diversified program of student activities. The Center contains Parents Lounge, a place for student relaxation, showing of movies, broadcasting of the weekly *Campus Caravan* radio show, and special dances and guest lectures. A television room adjoins the main lounge. The Center also has meeting rooms for student programs and offices for student organizations and publications. Its McNamara Room is a modern music room furnished with stereophonic equipment and records.

The main lounge was furnished by generous gifts from parents of students and was dedicated in 1962 as Parents' Lounge.

The snackbar-cafeteria is a favorite gathering place for faculty and students. This room does much to foster the Alfred tradition of informal faculty-student relationship.

*Cultural Programs Council* sponsors plays, concerts, lectures, and exhibits. These programs include outstanding organizations, lecturers, and artists in their respective fields as well as programs of local origin. The following are examples of the 1964-65 programs sponsored by the council.



The Baltimore Symphony Orchestra

Emlyn Williams — Charles Dickens Program

"The Messiah" by Handel. Presented by Alfred University Department of Music

Kenneth L. Turk, Director, International Agricultural Development,  
Cornell University

Topic: "Poverty and the World Food Supply"

Michel Block, pianist

Dr. Germaine Bree, Professor, Institute for Research in the Humanities,  
University of Wisconsin  
Topic: French Literature

Dr. John Hope Franklin, Professor of History at University of Chicago

Other Campus Programs involve students with outside groups which come to the campus for conferences, dinner meetings, and lectures. The annual invitational Businessmen's Seminar, the Solid State Symposium, American Guild of Organists' Church Music Institute, to mention a few, bring local, national, and international figures to the campus. A faculty speakers bureau provides programs for area cultural and service organizations.

The Fine Arts program integrates the activities of the different departments interested in the arts. The Department of Speech and Dramatic Arts presents annually several major dramatic productions. Students create, plan, and execute these programs.

The Department of Music provides musical programs on and off campus. Concerts, recitals by the staff, and student recitals are scheduled throughout the year. Special musical programs are prepared for convocations and seasonal events. One visiting artist or group is sponsored annually by the Music Department. The University Singers, Wind Ensemble, Orchestra, and the R.O.T.C. Band are the major organizations. The "Varsity 7" is one of the selected ensembles currently active.

The Fine Arts Festival is an annual event extending over several weeks. It includes exhibits of original work created by Alfred faculty members and students in painting, sculpture, and pottery.

*Davis Memorial Carillon*, dedicated in 1938, contains a total of 43 bells purchased by alumni and friends to honor a former president of the University, Boothe Colwell Davis, and his wife.

Eighteen of the bells were cast by Pieter Hemony in 1674 in Amsterdam. Of the bells produced for 50 carillons by the Hemony brothers, the Alfred collection is one of the few to survive. Sixteen bells, cast in the foundry of Joris Dumery, date from 1737. Eight bells were purchased in 1953 from the Petit-Fritsen foundry in Aarle-Rixtel in Holland to increase the range of the carillon to approximately four octaves. The largest bell weighs approximately 2 tons; the smallest, 18 pounds.

The *Silverman Collection* was assembled by the late Dr. Alexander Silverman, formerly Professor and Head, Department of Chemistry, University of Pittsburgh, and presented to Alfred University in 1951. From the standpoint of art and technology, this collection has been pronounced the most representative of modern glass in the world.

Some of its highlights are the following: enameled goblets from the table service of the last Czar; specimens of Sandwich glass, including ivy leaf, chrome aventurina; representative types of American glass produced by Dr. Silverman; and selected samples of modern and ancient glass from all over the world.

The collection is on display in Binns-Merrill Hall, College of Ceramics.

*Religious Life* on the campus is coordinated by the Director of Religious Activities. Religious leaders visit the campus for public addresses, forums, worship services, and personal counseling.

Many organizations and churches serve the religious interests of students. The Alfred University Christian Association is an interdenominational student organization affiliated with the New York State Student Christian Movement. Churches within walking distance include the Union University Church (Interdenominational), The First Seventh Day Baptist Church, St. Alban's Episcopal Mission, A Friends (Quaker) Meeting, and St. Jude's Chapel (Roman Catholic). The B'nai B'rith Hillel Foundation and the Methodist Student Fellowship also provide religious services and guidance.

#### STUDENT HEALTH SERVICE

The Student Health Service is supervised by the University Physician and staff of registered nurses. Before entering college, each undergraduate must have a physical examination. X-rays are a required part of a tuberculosis prevention and control program.

The Clawson Health Center provides facilities for the treatment of minor illnesses and injuries, ordinary clinical laboratory examinations, minor X-ray examinations, infra-red and short-wave therapy, whirlpool baths, and ordinary nursing care. The University will treat chronic illnesses within the limits of its facilities but cannot assume any responsibility for such illnesses which exist prior to the student's admission to the University. More serious cases of illness or contagious disease are treated in hospitals in neighboring Hornell. When a student needs hospitalization, he becomes a private patient with the privilege of choosing his own hospital and physician and must assume all financial obligations for such subsequent medical care supplied by or in the hospital.

# GENERAL INFORMATION

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COLLEGE YEAR     | The college year consists of two semesters of about 17 weeks each. During the summer, there are three sessions totaling 12 weeks which provide opportunities for those who wish to accelerate their programs or make up deficiencies (See University Calendar).                                                                                                                                                                                                                                                                                                  |
| REGISTRATION     | All students will register on the days designated in the calendar. Any undergraduate student who does not register at the appointed time in the regular college year will be charged a \$5.00 late registration fee. This late registration fee will also be charged for changes in courses selected if made at the student's request after the period regularly allowed for changes.                                                                                                                                                                            |
| CLASS ATTENDANCE | Regular class attendance is required for all freshmen, sophomores, and students on condition. The individual faculty member may grant to all juniors, seniors, and special students in good academic standing permission to absent themselves from his classes.<br><br>It is understood that the individual instructor may revoke or deny this permission at any time.<br><br>It is also understood that in all instances attendance is required at Assembly (freshmen and sophomores only), Charter Day, Honors Convocation, and other all-University programs. |

## COUNSELING AND GUIDANCE

Although normal, successful progress in the studies undertaken is the responsibility of the individual student, the administration and faculty of the University are active in offering guidance and help. Each student has a faculty adviser and should feel free to consult, formally or informally, any University faculty or staff member who might be of assistance. A counseling office is maintained for specialized services concerning aptitudes, study problems, and other guidance questions.

The first week of the academic year is primarily devoted to orienting entering students to university life and to their scholastic work.

Students should give serious attention to post-college plans early in their college careers and should consult with the chairmen of the departments concerned, especially if these plans involve graduate study.

Courses are numbered as follows:

|              |                                                                                       |
|--------------|---------------------------------------------------------------------------------------|
| 100-199      | courses primarily for first-year students.                                            |
| 200-299      | courses primarily for second-year students.                                           |
| 300-399      | courses primarily for upperclassmen. Not regularly open to graduate students.         |
| 400-499      | courses primarily for upperclassmen. May be taken for credit by graduate students.    |
| 500 and over | graduate courses. May be taken by a senior if his adviser and the instructor approve. |

Some 300 courses may be taken for credit by graduate students by special arrangements made in advance with the chairman of the department offering the course. When taken for graduate credit, the course number must be followed by the letter "G" entered at the time of registration. In many instances it will be quite appropriate for advanced undergraduate students to take 100 and 200 courses particularly in subjects outside their major area. *Note: The College of Ceramics uses the 300 and 400 numbers to designate courses of the third and fourth years respectively. A student should consult in advance department chairmen in the College of Ceramics if he is interested in earning graduate credit in such advanced courses.*

|                    |                                                                              |                      |
|--------------------|------------------------------------------------------------------------------|----------------------|
| GRADES AND INDICES | System of Grading. The work of students in each course is graded as follows: |                      |
|                    | A superior                                                                   | F failure            |
|                    | B+ very good                                                                 | I incomplete         |
|                    | B good                                                                       | NR no report         |
|                    | C+ above average                                                             | P passing            |
|                    | C average                                                                    | WP withdrawn—passing |
|                    | D+ below average                                                             | WF withdrawn—failing |
|                    | D poor                                                                       | AU audit             |
|                    |                                                                              | NC no credit         |

The withdrawal grades are used only if the student processes his withdrawal from a course prior to the dates published in the *Schedule of Courses and Directions for Registering*.

Incomplete grades not made up within the succeeding semester will be recorded as F. The lowest passing grade is D; however, a D earned in a course prerequisite to other courses will not permit the student to register in these courses. For example, a D in Mathematics 218 will give the student credit for the course, but he will not be permitted to register in any other course for which Mathematics 218 is a prerequisite. If the stated prerequisite is a year course (hyphenated), the average for both semesters must be at least D+.

Grading for graduate students is on a scale of A, B, C, or F. A graduate student must have an average of B or better in all courses to receive an advanced degree. When undergraduates enroll in a course primarily for graduates (500 and over) they will be graded on the same scale (A, B, C and F) and will receive point values of 4.0, 3.0, 2.0 or 0.0 in accordance with the table below.

All grades remain on the student's permanent record. If a course is repeated and a higher grade is earned, its index replaces that of the former grade.

*Note: A student wishing to take a summer school course elsewhere should obtain in advance written permission from his academic dean, especially if he wishes to be assured that the credit earned will be accepted by Alfred University. Requests for such permission should be accompanied by the printed course description from the catalog of the school the student wishes to attend.*

*Scholarship Indices.* In evaluating scholarship the following system of point values (indices) is used:

|                       |                      |
|-----------------------|----------------------|
| Each semester hour at |                      |
| A .....               | 4.0 points           |
| B+ .....              | 3.5 points           |
| B .....               | 3.0 points           |
| C+ .....              | 2.5 points           |
| C .....               | 2.0 points           |
| D+ .....              | 1.5 points           |
| D .....               | 1.0 point            |
| F .....               | 0.0 point            |
| WF .....              | 0.0 point            |
| WP, I, NR, P, AU, NC  | ..... no point value |

A student's index is obtained by dividing the total number of points by the total number of hours.

|                       |                                     |     |
|-----------------------|-------------------------------------|-----|
| SEMESTER<br>STANDARDS | First year, each semester .....     | 1.7 |
|                       | Second year, each semester .....    | 2.0 |
|                       | Third year, each semester .....     | 2.1 |
|                       | First semester of fourth year ..... | 2.2 |

The student's year is determined as follows:  
Less than 2 full semesters in attendance—first year  
2 but less than 4 full semesters in attendance—second year  
4 but less than 6 full semesters in attendance—third year  
6 or more semesters in attendance—fourth year  
Two summer sessions will be counted as one semester

Such ranking will also be used to determine a student's eligibility to enroll in a course when the description specifies the year in college.

## HONORS, PRIZES, AND AWARDS

**UNDERGRADUATE HONORS.** A Dean's Honors List is published at the end of each semester. This list is composed of the names of full-time matriculated students who have a semester's scholarship index of at least 3.30, who have no college entrance condition, and who have no incomplete grades for the semester.

A Dean's Honors List is also published for the school-year.

**SENIOR HONORS.** Three grades of honors are awarded, upon faculty approval, to seniors based on their cumulative scholarship attainment as evaluated through the middle of their senior year, viz.:

- (a) *Summa cum laude*, or highest honors, to those having a scholarship index of 3.90 and no grade below B.
- (b) *Magna cum laude*, or high honors, to those having a scholarship index of 3.70 and no grade below C.
- (c) *Cum laude*, or honors, to those having a scholarship index of 3.30

**DEPARTMENTAL HONORS.** These honors may be awarded to seniors at the time of their graduation by the departments in which they have pursued their major studies. The specific requirements for these honors are determined by each department. A candidate for departmental honors shall have attained a cumulative index of 3.30 in courses specified by the department in which the student majored and shall be recommended by the Chairman of the department.

Several scholarships and fellowships are awarded for outstanding academic accomplishment. The number of awards and the amounts of money involved vary from year to year. During the school year 1963-64, the following awards were made: To seniors, the Alcoa Foundation Scholarship (\$625), the Pennsylvania Glass Sand Corporation Scholarship (\$600), the Dr. and Mrs. E. V. Sheerar Memorial Scholarship (\$400); to entering juniors, the Ferro Enamel Company Scholarship (\$300); to entering sophomores the Ferro Enamel Company Scholarship (\$200), and the Scholes Award (Ceramic Association of New York), Transelco Scholarship (\$200).

*The Mary Goff Crawford Student Personal Library Award.* This award has been established by Dr. and Mrs. Finla G. Crawford of Andover, New York, in memory of his mother who was a student at Alfred University from 1878-1880. The income of this fund will be given annually to seniors and freshmen who enroll in competition for three annual prizes by entering their personal libraries. The senior possessing the best personal library will receive a \$50.00 award. Prizes of \$15.00 will be given to the second place senior and the freshman having the best personal book collection. The student library will be judged by an Award Committee composed of the Chairman of the Faculty Library Committee and two faculty members appointed annually to serve as judges. Committee decision will be based on breadth of the general collection or

merit as special collection of works by a single writer, or first editions, or books related to the student's discipline, or some other special category. The library must consist of at least 35 books, owned by the student and in his possession at the University, and accessible to the committee for inspection.

*The Mary Wager Fisher Literary Prize.* William Righter Fisher, Esq., of Philadelphia, contributed \$1000 to found in perpetuity a literary prize at Alfred University in memory of his late wife, Mary Wager Fisher, of the Class of 1863. The income of this fund will be given annually to one or more students as a prize for excellence in literary composition. The Chairman of the Department of English is chairman of the committee of award.

*The Major Edward Holmes Thesis Prize.* This prize of \$25 is awarded to the senior in Glass Science, Ceramic Engineering, or Ceramic Science who submits the best research thesis. This award is determined by the faculty and a committee representing the Ceramic Association of New York, the founder and donor of the prize.

*The Tau Delta Phi Scholarship Medal.* The Tau Delta Phi social fraternity annually awards this scholarship medal to the University student who has earned the highest cumulative scholarship index in three and one-half years of study.

*The College Citizenship Award.* This award was established by the Ceramic Association of New York, and it is made annually by student nomination and faculty vote, to that senior whose entire record as a College citizen is outstanding.

Academically outstanding freshmen women may be elected to either of the national honorary societies, Alpha Lambda Delta or Cwens. Keramos is the national honorary ceramic engineering fraternity to which outstanding engineering students may be elected.

#### CONDITION, SUSPENSION, DISMISSAL

A student whose index at the end of any semester falls below the minimum semester standard will be placed "on condition." Further, a student who has a low cumulative index, or low grades in critical prerequisite courses, may also be placed "on condition." A student "on condition" may, or may not, be permitted to participate in certain co-curricular activities or to carry a full curricular load. The students "on condition" are urged to take full advantage of all University advisory sources available to them.

A student "on condition" who fails to attain the required semester index or fails to meet other specified academic requirements may be suspended for one or two semesters. However, any student "on condition" who is unable or unwilling to improve his academic standing significantly will be dismissed.

A student suspended for academic reasons may be granted the opportunity to return on a conditional basis. A written request for readmission must be made to the academic dean at least two months before the anticipated return.

The University reserves the right to suspend or dismiss at any time students whose conduct is considered undesirable. Suspension or dismissal may or may not be accompanied by a public statement concerning the reason for such action.

Students "on condition" or "on extended condition" will lose the privilege of having a car on campus. Only commuters are exempt from this ruling.

#### WITHDRAWAL

A student who is obliged for any reason to withdraw from the University during the academic year will first consult with the Dean of Students or the Associate Dean of Students. Students who plan to withdraw at the end of either semester are also required to consult with the Dean of Students or Associate Dean of Students. Initiating withdrawal in this manner is primarily for proper guidance but is also necessary if the student is to receive refunds that are due. A student who withdraws during the summer must notify the Dean of Students or the Associate Dean of Students on or before July 1 if his \$50.00 advance deposit is to be refunded.

### GENERAL UNIVERSITY REGULATIONS

1. Attendance at the University is a privilege and not a right. The University reserves the right and the student concedes to the University the right to require the withdrawal of any student at any time for any reason deemed sufficient to it, and no reason for requiring such withdrawal need be given.
2. The traditions and principles of the University prohibit any conduct in violation of law or out of harmony with the standards of good society.
3. The University reserves the right to cancel any course if registration for it does not justify continuance.
4. The University reserves the right at any time to make changes deemed advisable in the rules and regulations and in the tuition and fees.
5. The University has general supervision of all student housing. Students may reside only in such houses as have University approval.
6. Resident freshmen may not have or operate motor vehicles either on campus or in the Village of Alfred. All permitted student motor vehicles must be registered with the Superintendent of Buildings and Grounds and a \$5.00 fee paid at the time of registration for classes. Cars brought to Alfred later in the school year must be registered immediately. Registration is for the academic year or remaining portion thereof.  
Commuters from outside the village and students living in University dormitories will be assigned to definite parking areas. Students living in the village may not park on campus during regulated parking hours, and no student may drive to classes unless he is physically handicapped. Students "on condition" or "on extended condition" will lose the privilege of having a car on campus. Only commuters are exempt from this ruling.
7. Students who wish to marry and continue in the University must notify the Personnel Deans in advance of the marriage, and present evidence of the parents' knowledge or consent. The University reserves the right to require the withdrawal of a student who marries secretly.
8. The possession of or consuming of any intoxicating beverage in University buildings or on University grounds is prohibited.

# ALFRED UNIVERSITY

## STATE UNIVERSITY OF NEW YORK

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State University at Binghamton  
State University at Buffalo  
State University at Stony Brook

#### MEDICAL CENTERS

Downstate Medical Center at Brooklyn (New York  
City)  
Upstate Medical Center at Syracuse

#### COLLEGES OF ARTS AND SCIENCE

College at Brockport  
College at Buffalo  
College at Cortland  
College at Fredonia  
College at Geneseo  
College at New Paltz  
College at Oneonta  
College at Oswego  
College at Plattsburgh  
College at Potsdam

#### SPECIALIZED COLLEGES

College of Forestry at Syracuse University  
Graduate School of Public Affairs at Albany  
Maritime College at Fort Schuyler (Bronx)  
College of Ceramics at Alfred University  
College of Agriculture at Cornell University  
College of Home Economics at Cornell University  
School of Industrial and Labor Relations at Cornell  
University  
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#### TWO-YEAR COLLEGES

Agricultural and Technical College at Alfred  
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#### COMMUNITY COLLEGES

(Locally-sponsored two-year colleges under the program of State University)  
Adirondack Community College at Hudson Falls  
Auburn Community College at Auburn  
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Broome Technical Community College at Binghamton  
Corning Community College at Corning  
Dutchess Community College at Poughkeepsie  
Erie County Technical Institute at Buffalo  
Fashion Institute of Technology at New York City  
Fulton-Montgomery Community College at Johnstown  
Hudson Valley Community College at Troy  
Jamestown Community College at Jamestown  
Jefferson Community College at Watertown  
Kingsborough Community College at Brooklyn  
Mohawk Valley Community College at Utica  
Monroe Community College at Rochester  
Nassau Community College at Garden City  
New York City Community College of Applied Arts and Sciences at Brooklyn  
Niagara County Community College at Niagara Falls  
Onondaga Community College at Syracuse  
Orange County Community College at Middletown  
Queensborough Community College at New York City  
Rockland Community College at Suffern  
Staten Island Community College at New York City  
Suffolk County Community College at Selden  
Sullivan County Community College at South Fallsburg  
Ulster County Community College at Kingston  
Westchester Community College at Valhalla

# CALENDAR

## FIRST SEMESTER 1965

|       |       |                  |                                                         |
|-------|-------|------------------|---------------------------------------------------------|
| Sept. | 13-15 | Monday-Wednesday | Registration                                            |
|       | 16    | Thursday         | Instruction begins at 8:00 a.m.                         |
|       | 20    | Monday           | Registration of part-time graduate students 5-8:00 p.m. |
| Oct.  | 7     | Thursday         | Opening of College Convocation and Charter Day          |
| Nov.  | 10    | Wednesday        | Mid-semester grades 12:00 M                             |
|       | 24    | Wednesday        | Thanksgiving recess begins at 10:00 a.m.                |
|       | 29    | Monday           | Instruction resumes at 8:00 a.m.                        |
| Dec.  | 15    | Wednesday        | Christmas recess begins at 10:00 a.m.                   |

1966

|      |       |                |                                                                               |
|------|-------|----------------|-------------------------------------------------------------------------------|
| Jan. | 3     | Monday         | Instruction resumes at 8:00 a.m.                                              |
|      | 17-18 | Monday-Tuesday | Study Days                                                                    |
|      | 19    | Wednesday      | Final Examinations begin                                                      |
|      | 24    | Monday         | Registration of part-time graduate students (for second semester) 5-8:00 p.m. |
|      | 28    | Friday         | Final Examinations and first semester end.                                    |

## SECOND SEMESTER

|      |       |                |                                           |
|------|-------|----------------|-------------------------------------------|
| Feb. | 2     | Wednesday      | Registration of new students              |
|      | 3     | Thursday       | Instruction begins at 8:00 a.m.           |
| Mar. | 18    | Friday         | St. Pat's Festival—half holiday           |
|      | 30    | Wednesday      | Mid-semester grades 12:00 M.              |
| Apr. | 1     | Friday         | Spring recess begins at 10:00 a.m.        |
|      | 12    | Tuesday        | Instruction resumes at 8:00 a.m.          |
|      | 21    | Thursday       | Honors Convocation                        |
| May  | 5     | Thursday       | Moving-up Day—no classes after 10:00 a.m. |
|      | 7     | Saturday       | Parents' Day                              |
|      | 23-24 | Monday-Tuesday | Study Days                                |
|      | 25    | Wednesday      | Final Examinations begin                  |
| June | 3     | Friday         | Final Examinations end                    |
|      | 5     | Sunday         | 109th Anniversary Commencement            |

## SUMMER SESSIONS 1966

|      |    |        |                       |
|------|----|--------|-----------------------|
| June | 6  | Monday | Interession begins    |
|      | 24 | Friday | Interession ends      |
|      | 27 | Monday | Summer Session begins |
| Aug. | 5  | Friday | Summer Session ends   |
|      | 8  | Monday | Postsession begins    |
|      | 26 | Friday | Postsession ends      |



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