1973

Firelands Bulletin 1973-1974

Bowling Green State University

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Firelands Bulletin 1973-1974
Bowling Green State University
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HISTORY OF THE FIRELANDS CAMPUS

The Firelands Campus traces its beginning to Bowling Green State University classes which were first taught in Sandusky in the fall of 1946, in cooperation with the Sandusky Board of Education primarily to help educate returning U.S. service veterans. Karl Whinnery, then Superintendent of Sandusky Schools, was instrumental in organizing the program. The first classes met at Sandusky High School during the evening.

In 1948 classes were discontinued until 1953 when Mr. Whinnery, who had retired as superintendent, became the first Director of the Sandusky Academic Center. He asked for University aid in organizing a two-year cadet teacher program which had a first-year enrollment of 30. Two years later, several courses of the Colleges of Arts and Sciences and Business Administration were added to the Center’s curriculum.

Mr. Whinnery was succeeded by Raymond Brickley in 1957 and by Ervin Carpenter in 1965. Dr. James H. McBride, the first full-time Director, was appointed in July, 1966. His title was changed to Dean in 1971.

The first move toward a permanent campus was taken in 1963 when the Exchange Club of Sandusky, the Sandusky Area Chamber of Commerce, and Bowling Green State University officials began discussing the future of higher education in the area.

Additional meetings were held in 1964 when the plan for a full-time campus, rather than a community college, was adopted. The Committee on Educational Development (COED), incorporated in March, 1965, guided the project.

On November 24, 1965, the Bowling Green State University Board of Trustees granted approval for a full-time day/night branch campus to serve Erie, Huron, and Ottawa Counties. The Ohio Board of Regents set March 1, 1966, as the deadline for citizens in the area to raise $600,000 before the state would release $1.8 million for the project. In an almost superhuman grass-roots effort, citizens of the tri-county area pledged or contributed more than $1.1 million, nearly double the quota.

The name “Firelands” was chosen at a COED meeting on October 18, 1966, and approved by Bowling Green State University Trustees on January 6, 1967. The name recalls the early history of the region when it consisted of land allocated to Connecticut families as compensation for damages suffered from the burning of homes and property at the hands of the British in the Revolutionary War.

A Site Selection Committee recommended the land to be purchased for the campus, and approval was given by COED which acquired the land and deeded it to the State of Ohio.

PHASE I: INITIAL CONSTRUCTION

On June 22, 1967, bids for construction of two buildings for the Firelands Campus were opened in the office of the State Architect in Columbus. Ground was broken on July 10, 1967, when Governor James A. Rhodes and Representative Ethel G. Swanbeck turned the first spadefuls of earth.

Construction required approximately 14 months; and, in the meantime, classes, with an expanded curriculum, continued to meet in the excellent facilities of Sandusky High School.
The first two air-conditioned buildings of brick and concrete design contain 93,000 square feet of floor space. The West Building is three stories high and has 28 classrooms and laboratories, a faculty lounge, 30 faculty offices, three conference rooms, an instructional media center, a language laboratory for disc and tape recordings, the 90-seat auditorium-like Firelands Room, student lockers and commuters' lounge.

The East Building is two stories high, the entire second floor of which is utilized by the library. The first floor houses administrative offices, bookstore, receiving department, mail room, and mechanical equipment. The campus grounds have been landscaped with numerous deciduous trees, shrubs, and evergreens outlining the driveways, parking areas, campus lake and court.

At the base of the flagstaff on the court circle is a plaque memorializing the Firelands area with a bronze seal marking the site of the campus.

**PHASE II: BUILDING PROGRAM**

In 1969, the Ohio Board of Regents designated Firelands Campus to offer technical education programs in the tri-county area. The 108th General Assembly of the State of Ohio in 1970 generously appropriated $2.5 million for the construction and equipment of the Phase II building. The new facilities opened in September, 1972, and increased the student capacity of Firelands and the variety of courses offered. Two-year career education programs have been developed which utilize special facilities in this new building.

An EPIC (Energy, Power, Instrumentation, and Control) laboratory comprises the main portion of the building with facilities for the new engineering technologies. The IDEA (Instruction, Demonstration, Exhibition, and Activities) area is a multi-purpose facility which also serves as a gymnasium with adjacent shower and dressing rooms. A 300-seat large-group instruction area, vendeteria, student recreation area, computer center, and faculty offices are included in Phase II.

**ACADEMIC OBJECTIVES AND ORGANIZATION**

I. It is the aim to offer courses from baccalaureate programs of Bowling Green State University and to permit students to follow the requirements of colleges from which they expect to receive their degrees. Such offerings are limited to the specific courses available at Firelands and students may find as much as two full years or more of courses available in programs described in the University bulletin.

Pre-baccalaureate students interested in pursuing baccalaureate degrees from Bowling Green State University or from other colleges or universities may attend Firelands and select courses without being subject to requirements placed on them by Firelands. Such students may find two years of study available in most Bowling Green State University programs although in some areas only one year of course work is available.

Bowling Green State University offers undergraduate programs from four colleges and three schools within their academic structure.

- **College of Education**
  - Bachelor of Science in Education
  - Bachelor of Science in Technology

- **College of Arts and Sciences**
  - Bachelor of Science
  - Bachelor of Arts
  - Bachelor of Liberal Studies

- **College of Business Administration**
  - Bachelor of Science in Business Administration
  - Bachelor of Science in Economics

- **College of Health and Community Services**
  - Bachelor of Science

- **School of Music**
  - Bachelor of Music

- **School of Journalism**
  - Bachelor of Science in Journalism
II. Firelands also offers two years of general studies courses leading to the Associate of Arts degree. Conferring of the Associate of Arts degree signifies students have reached the half-way point in the progression toward a baccalaureate degree when prescribed courses, insuring a liberal and general education, have been completed.

The Associate of Arts degree program is designed to provide pre-baccalaureate students with sound academic backgrounds in a breadth of academic disciplines. Credits earned are transferable to four-year programs. The program offers students flexibility sufficient to meet general studies requirements of college or university programs they may enter. The intent is to provide a liberal background within a two-year program. In addition, a concentration is available in one or two disciplines in the areas of the students' primary interests.

Seven general studies programs have been developed in the following areas:

A. Arts and Sciences
   - HUMANITIES—Presents the foundation of a bachelor of arts program with concentrations in approved humanities areas within the framework of Firelands course offerings.
   - LIBERAL STUDIES—Offers undecided students an opportunity to sample a variety of disciplines while insuring a well-rounded background in preparation for continuing study.
   - SCIENCE—Presents the foundation of a bachelor of science program with concentrations in mathematics and appropriate science courses of students' interests to provide a foundation for continuing study.
   - SOCIAL SCIENCE—Offers the foundation of a bachelor of arts program with concentrations in approved social science areas within the framework of Firelands course offerings.

B. Pre-Business Administration
   - Includes the general education requirements and business foundations in mathematics, accounting, economics, and statistics.

C. Teacher Preparation
   - ELEMENTARY EDUCATION—Offers students seeking certification in elementary education courses prescribed by colleges of education during the first two years in a framework that insures a broad background of study.
   - SECONDARY EDUCATION—Offers the general education requirements of colleges of education and sufficient opportunity for students to meet major and minor requirements in courses offered at Firelands.

III. Also offered are two-year, career-oriented curricula leading to the Associate of Applied Science and Associate of Applied Business degrees. Such programs prepare students for immediate employment in area communities and elsewhere, and also may be transferred to similarly oriented baccalaureate degree programs with little or no loss of credit.

Associate degree programs in applied areas are designed to prepare students to enter employment upon graduation. General studies or group requirements usually are not part of the curriculum. Courses are taken in some related general studies courses (e.g., English, speech, psychology), in appropriately related disciplines (e.g., applied mathematics and science, physical science), and in specific major areas (e.g., environmental technology, industrial education and technology).

A. Environmental Technology (Water and Air Quality Control)
B. Executive Secretarial Technology
C. Systems Analysis Technology (Computer Science)
D. Electronics Engineering Technology
E. Drafting and Design Technology
F. Electro-Mechanical Technology
ACADEMIC STRUCTURE

Bowling Green State University, including Firelands Campus, is on a quarter credit calendar. Three 10-week terms, plus an examination period following each term, comprise the academic year. A summer term schedule also is provided.

The campus operates on a daytime/evening schedule: 8:30 a.m. until 10:00 p.m. Registration by an individual student is permitted in daytime classes, evening classes or a combination of both. Classes meet for a period of 50 minutes per week for each hour of credit, or its equivalent. Instruction is supervised by members of the regular academic staff of Firelands and/or Bowling Green State University.

Upper division courses (junior, senior, and graduate level) are offered in addition to the courses listed in this bulletin. Those courses are administered by the Office of Continuing Education at the main campus and are not a regular part of the Firelands academic program. Every reasonable effort is made to offer courses as announced, but the right is reserved to withdraw any course from the schedule if enrollment is insufficient.

APPLICATION FOR ADMISSION

Regular Freshman Students

Any Ohio high school graduate who has never attended a college or university is eligible to submit an Application for Admission to the Director of Admissions, Bowling Green State University, Bowling Green, Ohio 43403.

Early application is necessary since formal admission must be approved prior to registration for classes. An Application for Admission may be obtained from the Student Services Office at the Firelands Campus or the Admissions Office at the Bowling Green campus. High school seniors are encouraged to submit applications early in their senior year to allow adequate opportunity for campus planning.

An Application for Admission to the fall quarter, 1973, must be submitted prior to September 1, 1973.
An Application for Admission to the winter quarter, 1974, must be submitted prior to December 1, 1973.
An Application for Admission to the spring quarter, 1974, must be submitted prior to March 1, 1974.

Each Application for Admission is processed in the Admissions Office on the main campus of Bowling Green State University.

A non-refundable $25 Application Fee must accompany the Application for Admission.

An official high school transcript must be submitted by each applicant. Each freshman applicant is required to submit official American College Test (ACT) results unless he has been graduated from high school three or more years prior to applying. Applicants intending to enroll in baccalaureate programs should take the regular ACT battery. Those planning to enroll in two-year career education programs must take the Career Planning Program (CPP) of the ACT. The student's high school counselor should be consulted for details concerning the ACT Testing Program, and Application for Admission can be submitted in advance of taking the ACT.

Regular Transfer Students

Under Bowling Green State University's transfer admission requirement, a student who has attended another accredited college or university is considered for admission:

1. If he has earned at least 90 quarter hours with a scholastic average equivalent to a 2.0 in a 4.0 system.
2. If he has earned less than 90 quarter hours with a scholastic average equivalent to a 2.5 in a 4.0 system. A student whose accumulative average is between 2.0 and 2.5 may be considered for admission upon petition. After an initial evaluation of his completed admission credentials by the Office of Admissions, a student in the petition range (2.0 to 2.5) is sent the Petition Form by the Office of Admissions. Upon the return of this form, an admission decision is made by the dean of the college to which the student is applying in consultation with the Director of Admissions.

A student who cannot meet the above transfer admission policies and who has not attended another college or university for a period of one or more years may be considered for Probationary Admission by petitioning the Director of Admissions.
A person who is awarded Probationary Admission needs to reduce his quality point deficiency by as many as four points in order to continue the following quarter. Due to limited academic and residence hall accommodations, Probationary Admission is available to the main campus only for the summer quarter. Probationary Admission is available at Firelands Campus for all quarters of the academic year.

The transfer student who wishes to enroll at the University as an undergraduate uses the regular Application Form. The University requires a record of the applicant’s high school studies from the principal or guidance director of the high school from which he has been graduated. An official transcript of credit is required from each college and/or university that the student has attended. This transcript must be mailed to the Director of Admissions by the institution and is not accepted from the student. In addition, a transfer recommendation card must be completed by the personnel dean of the last institution attended, and sent directly to the Dean of Students at Bowling Green State University. This card must be on file before formal admission can be granted.

SPECIAL ENROLLMENT METHODS

Regular freshman and transfer students are fully matriculated and eligible to pursue degrees from Bowling Green State University. Other students may be approved to enroll for classes without formal admission to the University.

TRANSIENT STUDENT ENROLLMENT

A transient student is one from another college or university with credits to be transferred to that institution. An official statement is required from the parent institution prior to admission to show that the student is in good standing and has permission to take the course. If a transient student is not in continuous enrollment, another statement of good standing from the parent institution must be obtained.

UNCLASSIFIED STUDENT ENROLLMENT

An unclassified student is one not working toward a degree, usually a person taking courses for self-improvement or similar personal reasons. A student already holding a bachelor’s degree or the equivalent may take a full or partial schedule of courses. An official statement of the degree earned or a transcript of credits is required. If an unclassified degree-holder is not in continuous enrollment, another official statement must be obtained. A student who has not previously attended Bowling Green or another college or university may accumulate a maximum of 12 quarter hours as an unclassified student at Firelands Campus.

READMISSION OF FORMER STUDENTS

A student who has not been in continuous attendance excluding summer school must complete the Application for Readmission Form.

CLASSIFICATION OF STUDENTS

A student is classified as follows in a baccalaureate degree program requiring a total of 183 quarter hours: freshman, 0-44 hours; sophomore, 45-89 hours; junior, 90-134 hours; senior, 135 hours to graduation. Regular students admitted as new freshmen or transfers are classified on the basis of degree program and credit hours completed. Transients, unclassifieds, and degree-holders do not receive classification (i.e. freshman, sophomore, etc.) since they are not following regular degree programs.

APPLICATION FEE

An Application Fee of $25 must accompany an Application for Admission. The Application Fee is refunded only if the student is denied admission to the University.
REGISTRATION FOR CLASSES

A student may register for classes on the dates specified in the Firelands Campus calendar. Registrations for Firelands courses can be accepted only at Firelands Campus at the times specified and will not be processed at the main campus.

Additions or deletions from the original schedule of courses should be made by a Change of Schedule form. A student should not register more than once. A Change of Schedule fee of $3 is made for any change in registration after a schedule of courses has been submitted by a student.

No student may enroll in a course later than seven calendar days after the beginning of classes in any quarter.

CHANGES IN REGISTRATION

Change of Course

After classes begin, all schedule changes must be approved by the Student Services Office.

Withdrawal from a Course

An undergraduate may drop a course during the first three weeks of a quarter with a grade of W. A student who drops a course during the fourth through the sixth week of a quarter receives a grade of WP or WF according to his standing in the course. A grade of WF is assigned to courses dropped after the sixth week of a quarter. A student should not terminate his class attendance without completing the official Withdrawal Notice or Change of Schedule form. Students who register and later decide not to attend, prior to the beginning of classes, should correspond with Firelands Campus to communicate their intentions.

Withdrawal from the University

A student who wishes to withdraw from the University in good standing must obtain the permission of the Dean of the Firelands Campus and must complete the official Withdrawal Notice available for the purpose.

If a student withdraws from the University with permission, he has a mark of W recorded in all courses unless he has previously withdrawn from a course with WF. A student who withdraws from the University within three weeks of the end of the quarter is not permitted to enroll for the next quarter except by special permission of his academic dean.

If a student leaves the University without proper notice and permission, he receives a mark of WF in all courses. He is not entitled to any refund of fees nor to a certificate of honorable dismissal.

GRADING SYSTEM

The following system of marks is used in reporting and recording a student’s proficiency in his courses: A—excellent; B—good; C—acceptable; D—poor, but passing; F—failure.

In a few courses, such as student teaching and Library Science 491, the only marks given are S—satisfactory and F—failure.

In the Honors Seminars; internship courses; remedial courses; and the required course in health and physical education, H.P.E. 100, the marks used are S—satisfactory and F—failure.

A student may request the S-U grading option in as many as twelve courses in a baccalaureate degree program in addition to courses universally graded on an S-U basis. The student is permitted more than one S-U option in a quarter providing the number of such registrations does not exceed three in an academic year or four in an academic year and the succeeding summer quarter. The option must be declared at the Student Services Office no later than seven calendar days after the beginning of classes for a quarter. The S-U option is permitted in courses taken as fulfillment of major, minor, and group requirements or electives in accordance with standards established by the appropriate undergraduate college and departmental councils. College and departmental standards on S-U options are available to the student through his academic adviser.

A grade of S is interpreted as falling within the range of A to C and carries full credit. A grade of U is interpreted as D to F and carries no credit. Neither grade is considered in the accumulative point average.
When a student withdraws from a course with the permission of the dean of his college, the course is marked W—withdrawn; WP—withdrawn passing; or WF—withdrawn failing.

REPEATING A COURSE

When a student repeats a course in which he has received a failing grade, or has received a “D” grade in a course in which a grade of at least “C” is prerequisite for another course, only the second grade will be utilized in computing his point average.

ACADEMIC STANDING

A student who is enrolled at Firelands or at the main campus is placed on warning, probation, or in a dropped status only after he has received marks for a minimum of 9 hours.

ACADEMIC WARNING

The freshman or sophomore is warned of unsatisfactory progress when his accumulative point hours and quality points indicate that he is deficient from a C (2.0) average by more than 5 quality points.

ACADEMIC PROBATION

The academic standing of a freshman or sophomore is considered unsatisfactory and he is placed on academic probation when his accumulative point hours and quality points indicate that he is deficient from a C (2.0) average by more than 10 quality points.

The academic standing of a junior or senior is considered unsatisfactory and he is placed on academic probation when his accumulative point hours and quality points indicate that he is deficient from a 2.0 average by more than 5 quality points.

A student on probation because of unsatisfactory academic standing must follow a restricted program as follows:

1. His course load must not exceed 16 hours and may be less if so determined by his college dean;
2. He may not take part as a performer, an officer, or an active participant in any intercollegiate activity, meeting or conference except that an activity begun in any quarter may be completed in the following quarter.

ACADEMIC DISMISSAL

A freshman or sophomore student is academically dismissed from the University when his accumulative point hours and quality points indicate that he is deficient from a 2.0 average by more than 15 quality points.

The junior or senior student is academically dismissed when he is deficient from a 2.0 accumulative average by more than 10 quality points.

A notice of warning, probation, or dismissal is sent by the University both to the student and to his parents or guardian.

A junior or senior who is in good standing at the beginning of the fall quarter may enroll for the winter and spring quarters of the same year without regard to his academic standing at the close of the preceding quarter. Students in associate degree programs at Firelands may petition the Firelands Academic Review Board for reinstatement.

COURSES AVAILABLE FOR NEW STUDENTS

A student who plans to begin classes in any quarter may enroll only in courses which do not require prerequisites as listed in this bulletin.

UNIVERSITY HONORS

A student who demonstrates a high level of excellence in his academic work has his name placed on the University Honors List. The requirement for achieving the University Honors List is a point average of 3.5 or above in the preceding quarter.
UNIVERSITY REGULATIONS

All regulations published in the University Bulletin apply to Firelands Campus. In addition, the Student Guide documents the student's relationship to the University community and outlines the procedural guidelines of student discipline. Every student should examine the Bulletin and Student Guide and be familiar with their contents.

A student found guilty of violating or dishonoring University regulations or of being involved in moral or ethical misconduct may be dismissed. When, in the judgment of University officials, a student's actions are deleterious to others or threaten the orderliness and well-being of the University, he may be dismissed.

The student is held responsible for apparatus he loses or damages and for materials he wastes in class and/or in laboratories. This does not apply to wear resulting from normal usage.

ACADEMIC HONESTY

One of the objectives of University policy on academic honesty is to communicate to all members of the University community the conviction of the University and its faculty that cheating and plagiarism are destructive to the central purposes of the University and are universally disapproved. In addition, the policy statement provides procedures for accomplishing these objectives by the student body, faculty, academic deans, and the University Academic Honesty Committee.

Included among these procedures are the following provisions:

1. Each faculty member should include in his introduction to a course a statement of his policies with regard to cheating and plagiarism;
2. Every instance of academic dishonesty must be reported to the dean of the college in which the student is enrolled, and to the dean of the college in which the course is taught, and to the Dean of Students, either by the instructor or by a student in the class where the incident occurs;
3. Penalties for offenses may range from warning to expulsion; a range of penalties for each particular type of offense is listed in the policy statement;
4. The University Academic Honesty Committee shall have appellate jurisdiction in cases of academic dishonesty. The academic dean assessing a penalty shall inform the student in writing of his right to appeal. An appeal must be initiated in writing within ten days of the date on which the student receives notice of the penalty. An appeal may be based on new evidence or on procedural errors in the proceedings leading to the assessment of the penalty;
5. The complete statement of policy is published in all editions of the Student and Faculty Handbooks.

CLASS ATTENDANCE

A student is expected to attend regularly all classes for which he is enrolled. Instructors announce individual attendance policies during the first week of classes.

FEES AND CHARGES

The student who attends Firelands Campus of Bowling Green State University pays lower fees than one who attends classes in Bowling Green. A student enrolled for 10 or more lower division hours pays a fee of $235 per quarter. An Excess Credit Fee of $15 is charged with the nineteenth hour each quarter and continuing for every hour thereafter.

A student who registers for 1 to 9 hours pays a fee of $24.00 per quarter hour.

A student who is not a legal resident of Ohio, as defined by the University Bulletin, pays a nonresident fee.

PAYMENT OF FEES AND CHARGES

All fees and charges are payable in advance of the quarter for which the student is enrolled.

A student who pays his fees after the last day designated for this purpose is assessed a Late Registration Charge of $5 for each day he is late, including Saturdays and Sundays.
REFUND OF FEES

In case of a student's formal withdrawal from the University in any quarter, fees, except for the Application Fee, are refunded on the following basis: during the calendar week (Sunday through Saturday) in which classes begin, 90 per cent; during the second calendar week, 80 per cent; during the third calendar week, 60 per cent; during the fourth calendar week, 40 per cent; after the fourth week, no refund. A student withdrawing under discipline forfeits all rights to the return of any portion of his fees. A student who stops attending classes and does not complete a formal Withdrawal Notice is not entitled to any refund.

STUDENTS

Firelands Campus opened in September, 1968, with 700 students. Enrollment has been marked by steady growth since that time. Students are primarily from the tri-county area in Ohio which includes Erie, Huron, and Ottawa counties. Increasing numbers of students are enrolling from other parts of Ohio, and each term some students come from other states.

The campus expects an enrollment in excess of 1,200 in the fall term, 1974. Approximately one-half will be full-time students. An enrollment ceiling has not been established for the campus, although facilities can accommodate 2,000.

Activities and programs have developed at the campus primarily through student initiative. Every attempt has been made to encourage students to assist in the development of co-curricular programs of relevance to their interests and attitudes.

LIBRARY

The library of the Firelands Campus of Bowling Green State University urges students to enrich their education through full use of its information resources.

A Library Handbook is available for information relative to using the facilities of the library. Questions concerning library operations are welcomed and receive prompt attention. The Firelands Library is established for service to students, faculty, and community and is interested in student suggestions for improvement.

Since spring 1972 the Firelands Library has enjoyed strong support from the Friends of the Firelands Campus Library, an organization of students, faculty, and area citizens who work to provide special resources and promote the library. Students are invited to take an active role in the Friends program.

FINANCIAL AIDS

A program of financial aids has been established and is available to Firelands students. It has been planned to provide scholarships, student loans, and opportunities for employment on an increasing basis. Information about this program is available through the Office of the Director of Student Services.

UPPER DIVISION COURSES

Firelands Campus is intended primarily to serve the higher educational needs of the student in his freshman and sophomore years of college. However, an important function of Firelands, as part of Bowling Green State University, is to provide opportunities for some study at the junior, senior, and (occasionally) graduate levels. The administration of these courses is the responsibility of the Office of Continuing Education in Bowling Green.

Every reasonable consideration is given to requests for upper-level courses and for lower-level courses not scheduled to be offered at Firelands during a given quarter.

A person interested in such courses is encouraged to complete a Course Request Form obtainable at the Office of the Dean.

THE FIRELANDS CAMPUS BULLETIN

The Firelands Campus Bulletin is intended as a supplement to the University's General Bulletin. Therefore a student who applies for admission to the University is urged to read carefully the General Bulletin of Bowling Green State University mailed by the Office of Admissions to every person making application as a regular student.
Three associate degrees are offered by Firelands Campus. Pre-baccalaureate students may enroll in the Associate of Arts program although this degree also may serve as a terminal program for those not wishing to complete baccalaureate degrees at a four-year campus.

The Associate of Applied Business and Associate of Applied Science degrees are intended primarily to prepare students for employment directly upon graduation. Although termed career education, they are articulated with similarly oriented four-year programs.

ASSOCIATE DEGREE REQUIREMENTS

Students who seek an associate degree must complete both general requirements and specific requirements for the degree sought.

I. General Requirements.

A. Earn a minimum of 93 hours of credit (with at least a 2.0 "C" cumulative average) which includes English 111 and 112 and Speech 102, or equivalent.

English 111 may be waived depending upon ACT scores in English, or another measure of achievement.

B. Earn at Firelands Campus a minimum of 30 credit hours of the final 36 hours counting toward the degree.

C. Fulfill the stated requirements of one of the degree programs.

D. Apply for graduation at least eight weeks prior to the commencement date when the student expects to receive the degree.

II. Degree Programs

A. Associate of Arts. Awarded to one who completes one of the prescribed curricula including group requirements listed below, and complies with general degree requirements cited above.

Group Requirements

1. Communications. Each student is required to acquire proficiency in written expression and oral communication. English 112 is required and those with an American College Test score of 18 or below or who have been graduated from high school for three or more years must complete English 111. Speech 102 is required.

2. Mathematics/Science. Each student must complete a minimum of 15 credit hours in mathematics and science.

3. Social Science. Each student must complete a minimum of 15 credit hours in courses designated social science.

4. Fine and Applied Arts. Each student must complete a minimum of 15 credit hours in courses designated fine and applied arts including one course in English literature.

5. Physical Education. Three academic quarters of physical education (HPE 100) are required of each student for a minimum of 3 credits. This requirement may be waived for a student who has attained the age of 21 at the time of initial registration, by written statement from a personal physician, or if a veteran of the military service. Exemption from physical
education does not excuse a student from meeting the 93 quarter hours minimum graduation requirement.

Major Areas of Study:

Arts and Sciences
1. Humanities
2. Liberal Studies
3. Science
4. Social Science

Pre-Business Administration
   Business Administration

Teacher Preparation
1. Elementary Education
2. Secondary Education

B. Associate of Applied Business. Awarded to one who successfully completes a career-oriented program listed below and the general requirements cited above:
   1. Executive Secretarial Technology
   2. Systems Analysis Technology (Computer Science)

C. Associate of Applied Science. Awarded to one who successfully completes one of the career-oriented programs listed below and the general requirements cited above:
   1. Environmental Technology (Air & Water Quality Control)
   2. Electronics Engineering Technology
   3. Drafting and Design Technology
   4. Electro-Mechanical Technology
ASSOCIATE OF ARTS DEGREE PROGRAMS

HUMANITIES

Group Requirements

I. COMMUNICATIONS. Each student is required to acquire proficiency in written expression and oral communication. English 112 is required and those with an American College Test score of 18 or below, or who have been graduated from high school for three or more years, must complete English 111. Speech 102 is required. 8 hours minimum.

II. MATHEMATICS/SCIENCE. Each student must complete both (a) and (b) below. 15 hours minimum.

   a. One of the following:
      1. Three and one-half years of high school mathematics or equivalent proficiency as demonstrated by earning a score of 26 on the American College Test Mathematics section.
      2. Mathematics 122 or 124 or 130.
      3. Mathematics 121 and Philosophy 205.

   b. At least 8 hours of laboratory courses in the same science elected from biology, computer science, chemistry, geology, physics, physical geography, and physical science.

III. SOCIAL AND BEHAVIORAL SCIENCE. Each student must complete a minimum of 15 hours from at least two departments including a minimum of 8 hours in one department. Eligible departments include: economics, geography, history, political science, psychology, and sociology.

IV. FINE AND APPLIED ARTS. Each student must complete a minimum of 28 hours from at least three of the departments listed below. One course in English literature must be included. Art, English, philosophy (except Philosophy 205 used to apply to Group II), and speech.

V. OTHER REQUIREMENTS. Each student must complete 3 hours in HPE 100.

VI. ELECTIVES. Each student must select a sufficient number of electives to earn a minimum of 93 hours. A student planning to pursue a baccalaureate degree in Arts and Sciences is encouraged to take a foreign language.

Typical Schedule

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 111/112</td>
<td>4-8</td>
</tr>
<tr>
<td>Math elective</td>
<td>5</td>
</tr>
<tr>
<td>Science</td>
<td>8-10</td>
</tr>
<tr>
<td>Social Science</td>
<td>8</td>
</tr>
<tr>
<td>Fine &amp; Applied Arts</td>
<td>8</td>
</tr>
<tr>
<td>HPE 100</td>
<td>3</td>
</tr>
<tr>
<td>Speech 102</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>8-10</td>
</tr>
</tbody>
</table>

48
LIBERAL STUDIES

Group Requirements

I. COMMUNICATIONS. Each student is required to acquire proficiency in written expression and oral communication. English 112 is required and those with an American College Test score of 18 or below, or who have been graduated from high school for three or more years, must complete English 111. Speech 102 is required. 8 hours minimum.

II. MATHEMATICS/SCIENCE. Each student must complete a minimum of 15 hours in at least two sciences or a science and a mathematics combination.

III. SOCIAL AND BEHAVIORAL SCIENCES. Each student must complete a minimum of 15 hours chosen from the following departments: economics, geography, history, political science, psychology, and sociology.

IV. FINE AND APPLIED ARTS. Each student must complete a minimum of 15 hours from the departments listed below. One course in English literature must be included. Art, business education, English, French, home economics, industrial education and technology, philosophy, Spanish, and speech.

V. OTHER REQUIREMENTS. Each student must complete 3 hours in HPE 100. In addition, each student must complete 24 hours at the 200 level.

VI. ELECTIVES. Each student must select a sufficient number of electives to earn a minimum of 93 hours. A student planning to pursue a baccalaureate degree in Arts and Sciences is encouraged to take a foreign language.

Typical Schedule

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 111/112</td>
<td>4-8</td>
<td>English literature</td>
</tr>
<tr>
<td>Math/Science</td>
<td>10</td>
<td>Math/Science</td>
</tr>
<tr>
<td>Social Science</td>
<td>8</td>
<td>Social Science</td>
</tr>
<tr>
<td>Fine &amp; Applied Arts</td>
<td>7</td>
<td>Fine &amp; Applied Arts</td>
</tr>
<tr>
<td>HPE 100</td>
<td>3</td>
<td>Electives</td>
</tr>
<tr>
<td>Speech 102</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>6-8</td>
<td></td>
</tr>
</tbody>
</table>

48

SCIENCE

Group Requirements

I. COMMUNICATIONS. Each student is required to acquire proficiency in written expression and oral communication. English 112 is required and those with an American College Test score of 18 or below, or who have been graduated from high school for three or more years, must complete English 111. Speech 102 is required. 8 hours minimum.

II. MATHEMATICS/SCIENCE. Each student must complete a minimum of 30 hours including a concentration of four courses in a major field and two courses in a cognate field. Eligible departments include: biology, computer science, chemistry, geology, physical geography, mathematics, and physics. Mathematics 130 or 131, depending on student’s preparation, is required.

III. SOCIAL AND BEHAVIORAL SCIENCE. Each student must complete a minimum of 21 hours including Psychology 201 and courses from at least two other departments. Eligible departments include: economics, geography, history, political science, and sociology.

IV. FINE AND APPLIED ARTS. Each student must complete a minimum of 15 hours from at least two departments listed below. One course in English literature must be included. Art, English, philosophy, and speech.

V. OTHER REQUIREMENTS. Each student must complete three hours in HPE 100.

VI. ELECTIVES. Each student must select a sufficient number of electives to earn a minimum of 93 hours. A student planning to pursue a baccalaureate degree in Arts and Science is encouraged to take a foreign language.
SOcial Sciences

Group Requirements

I. Communications. Each student is required to acquire proficiency in written expression and oral communication. English 112 is required and those with an American College Test score of 18 or below, or who have been graduated from high school for three or more years, must complete English 111. Speech 102 and an additional course in speech communication is required. 12 hours minimum.

II. Mathematics/Science. Each student must complete both (a) and (b) below. 15 hours minimum.

a. One of the following:
   1. Three and one-half years of high school mathematics or equivalent proficiency as demonstrated by earning a score of 26 on the American College Test Mathematics section.
   2. Mathematics 122 or 124 or 130.
   3. Mathematics 121 and Philosophy 205.

b. At least 8 hours of laboratory courses in the same science elected from biology, computer science, chemistry, geology, physics, physical geography, and physical science.

III. Social and Behavioral Science. Each student must complete a minimum of 28 hours from at least three departments including an approved concentration. Eligible departments include: economics, geography, history, political science, psychology, and sociology.

IV. Fine and Applied Arts. Each student must complete a minimum of 15 hours from at least two of the departments listed below. One course in English literature must be included. Art, English, philosophy (except Philosophy 205 used to apply to Group II), and speech.

V. Other Requirements. Each student must complete 3 hours in HPE 100.

VI. Electives. Each student must select a sufficient number of electives to earn a minimum of 93 hours. A student planning to pursue a baccalaureate degree in Arts and Sciences is encouraged to take a foreign language.
II. MATHEMATICS/SCIENCE. Each student must complete a minimum of 26 hours including Statistics 111 and 212, QAC 160, and one of the following:
   a. Mathematics 124 and 125 and a science (15 hours); or
   b. Mathematics 131, 231, and 232 (15 hours)
III. SOCIAL AND BEHAVIORAL SCIENCES. Each student must complete a minimum of 23 hours including Psychology 201 or Sociology 101 and Economics 201 and 202. The remainder may be chosen from the following: geography, history, political science, psychology, and sociology.
IV. FINE AND APPLIED ARTS. Each student must complete a minimum of 15 hours from at least two of the departments listed below. One course in English literature must be included. Art, foreign language, English, philosophy, and speech.
V. OTHER REQUIREMENTS. Each student must complete Accounting 221 and 222, and HPE 100 (3 hours).
VI. ELECTIVES. Each student must select a sufficient number of electives to earn a minimum of 93 hours.

Typical Schedule

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 111/112</td>
<td>4-8</td>
</tr>
<tr>
<td>Math 124/125 or 131/231</td>
<td>10</td>
</tr>
<tr>
<td>Science/Math</td>
<td>5</td>
</tr>
<tr>
<td>Social Science</td>
<td>8</td>
</tr>
<tr>
<td>Fine &amp; Applied Arts</td>
<td>8</td>
</tr>
<tr>
<td>Speech 102</td>
<td>4</td>
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<tr>
<td>Statistics 111</td>
<td>4</td>
</tr>
<tr>
<td>HPE 100</td>
<td>3</td>
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<tr>
<td></td>
<td>48</td>
</tr>
</tbody>
</table>

IV. FINE AND APPLIED ARTS. Each student must complete Art 101 and an English literature course. Two additional courses must be selected from the following areas: art, business education, English, French, home economics, industrial education and technology, philosophy, Spanish, and speech. 15 hours minimum. Speech 202 and Philosophy 205 are recommended.
V. OTHER REQUIREMENTS. Each student must complete the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>HPE 109, 110</td>
<td>5</td>
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<tr>
<td>HPE 100</td>
<td>3</td>
</tr>
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</table>
VI. ELECTIVES. Each student must select a sufficient number of electives to earn a minimum of 93 hours.
### Typical Schedule

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 111/112</td>
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<tr>
<td>Biology 101 or 104</td>
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<tr>
<td>Physical Science</td>
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<tr>
<td>Geography 121, 122</td>
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<tr>
<td>History 151 or 152 or 153</td>
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<td>HPE 109, 110</td>
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<tr>
<td>HPE 100</td>
<td>3</td>
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<tr>
<td>Art 101</td>
<td>3</td>
</tr>
<tr>
<td>Speech 102</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>8-10</strong></td>
</tr>
</tbody>
</table>

**48**

### SECONDARY EDUCATION

#### Group Requirements

I. COMMUNICATIONS. Each student is required to acquire proficiency in written expression and oral communication. English 112 (minimum grade of “C”) is required and those with an American College Test score of 18 or below, or who have been graduated from high school for three or more years, must complete English 111. Speech 102 is required. 8 hours minimum.

II. MATHEMATICS/SCIENCE. Each student must complete a minimum of 15 hours in at least two sciences or a science and a mathematics combination.

III. SOCIAL AND BEHAVIORAL SCIENCES. Each student must complete a minimum of 20 hours, including Psychology 201, chosen from the following departments: economics, geography, history, political science, psychology, and sociology.

IV. FINE AND APPLIED ARTS. Each student must complete a minimum of 15 hours from at least two of the departments listed below. One course in English literature must be included. Art, business education, English, French, home economics, industrial education and technology, philosophy, Spanish, and speech.

V. OTHER REQUIREMENTS. Each student must complete 3 hours in HPE 100. Each student should consult an adviser for information concerning courses required in various secondary teaching fields.

VI. ELECTIVES. Each student must select a sufficient number of electives to earn a minimum of 93 hours.
ASSOCIATE OF
APPLIED BUSINESS DEGREE PROGRAMS

SYSTEMS ANALYSIS (COMPUTER SCIENCE) TECHNOLOGY

The two-year associate degree program in Systems Analysis is designed to prepare
the graduate for a position as programmer/analyst in business, industry, education,
government or public service. The program will provide a solid foundation in basic
mathematics, accounting principles and communication skills, both oral and written.
The major characteristic of the program is the development of proficiency in
computer programing and systems analysis.
The program begins with the presentation of the principles of computer logic and
decision-making and progresses into computer languages.
The computer science and computer science technology courses are supported by
data processing laboratories where the student will apply the techniques learned in
the classroom. The program will culminate with the assignment of a field project that
will enable the student to apply his data processing skills to a practical problem in
business, industry, or some other appropriate situation.
The curriculum is designed to decrease emphasis on unit record equipment
courses and emphasize electronic data processing.

COMPUTER SCIENCE TECHNOLOGY CURRICULUM
First Year
FALL
CPS 101 Introduction to Computing I 5
AMS 110 Developmental Mathematics 3
or
BA 102 Introduction to Business 4
Eng. 111 Introductory Writing: Technical Emphasis 4
Soc. 101 Principles of Sociology 4

WINTER
CPS 102 Introduction to Computing II 5
AMS 121 Applied Mathematics 5
Psych. 201 General Psychology 5
Spch. 102 Principles of Speech 4

SPRING
CST 131 Electronic Data Processing Laboratory I 4
CST 260 Techniques of Cobol Programming 4
Stat. 111 Elementary Statistical Methods 4
Eng. 112 Varieties of Writing: Technical Writing 4

Second Year
FALL
CPS 201 Computers and Programming I 4
CPS 203 Logical Foundations of Computing 4
CST 221 Systems and Procedures I 3
Acct. 221 Principles of Accounting 4
Stat. 212 Elementary Statistical Methods II 4

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The two-year Executive Secretarial Technology course at Firelands Campus prepares students for secretarial and administrative assistant positions in business and industrial establishments, professional offices, and government agencies. The program is designed to give students specific office skills necessary to attain positions as secretaries and/or administrative assistants. In addition, courses in communication and advanced business theory enhance the students' opportunities for career advancement. The program is flexible so that it can meet the needs of both the beginning and advanced secretarial students. All college credits received in the two-year program are transferable if the students decide later to continue study toward four-year degrees.

This course of study is intended as a general guide, subject to the availability of courses and individual needs of the student. Courses without prerequisites, as identified from the General Bulletin, may be taken at any time during the student's program with approval of the program adviser.

**EXECUTIVE SECRETARIAL TECHNOLOGY CURRICULUM**

**First Year**

**FALL**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>BE 101</td>
<td>Business Mathematics</td>
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<tr>
<td>BE 111</td>
<td>Beginning Typewriting</td>
<td>3</td>
</tr>
<tr>
<td>BE 213</td>
<td>Beginning Shorthand</td>
<td>3</td>
</tr>
<tr>
<td>BA 102</td>
<td>Introduction to Business</td>
<td>4</td>
</tr>
<tr>
<td>HPE 100</td>
<td>General Physical Education</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
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**WINTER**

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<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>BE 112</td>
<td>Intermediate Typewriting</td>
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<tr>
<td>BE 214</td>
<td>Intermediate Shorthand</td>
<td>3</td>
</tr>
<tr>
<td>Spch. 102</td>
<td>Principles of Speech</td>
<td>4</td>
</tr>
<tr>
<td>Eng. 111</td>
<td>Introductory Writing</td>
<td>4</td>
</tr>
<tr>
<td>HPE 100</td>
<td>General Physical Education</td>
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<tr>
<td><strong>TOTAL</strong></td>
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**SPRING**

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<tr>
<td>BE 210</td>
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<tr>
<td>BE 211</td>
<td>Office Reproduction</td>
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<tr>
<td>BE 215</td>
<td>Advanced Shorthand</td>
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<tr>
<td>Eng. 112</td>
<td>Varieties of Writing</td>
<td>4</td>
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<tr>
<td>Elective</td>
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<td>3-4</td>
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<td><strong>TOTAL</strong></td>
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<td><strong>16-17</strong></td>
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### Second Year

#### FALL

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<tbody>
<tr>
<td>BE 230</td>
<td>Records Management</td>
<td>3</td>
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<tr>
<td>BE 220</td>
<td>Data Processing I</td>
<td>3</td>
</tr>
<tr>
<td>BE 311</td>
<td>Dictation and Transcription</td>
<td>3</td>
</tr>
<tr>
<td>BL 301</td>
<td>Business Law</td>
<td>4</td>
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<tr>
<td>BE 240</td>
<td>Business Problems of Consumer</td>
<td>4</td>
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<td><strong>Total</strong></td>
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#### WINTER

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<th>Course</th>
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<tbody>
<tr>
<td>BE 321</td>
<td>Data Processing II</td>
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<tr>
<td>BE 312</td>
<td>Advanced Dictation and Transcription</td>
<td>4</td>
</tr>
<tr>
<td>BE 303</td>
<td>Business Communications</td>
<td>4</td>
</tr>
<tr>
<td>Acct. 221</td>
<td>Principles of Accounting</td>
<td>4</td>
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#### SPRING

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<tr>
<td>BE 314</td>
<td>Internship</td>
<td>1-3</td>
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<tr>
<td>BE 401</td>
<td>Secretarial Administration</td>
<td>5</td>
</tr>
<tr>
<td>Econ. 200</td>
<td>Introduction to Economics</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
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<td>3-4</td>
</tr>
<tr>
<td>HPE 100</td>
<td>General Physical Education</td>
<td>1</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>14-17</strong></td>
</tr>
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</table>

**TOTAL** 96
ENVIRONMENTAL TECHNOLOGY (AIR & WATER QUALITY CONTROL)

The objective of the curriculum in environmental technology is to prepare technicians capable of assisting sanitation engineers, water and sewage treatment plant operators, pollution law enforcement personnel, industrial quality control engineers, and others directly associated with air and water pollution detection and abatement. Although the emphases on air and water quality control are strong, they do not totally define the program. Other aspects of public health, land use, and environmental decision-making are included.

The course content is designed to improve communications skills, identify current pollution problems and develop the technical expertise necessary for dealing with pollution problems and control functions. It is assumed that knowledge and skills learned on the job will further develop specific abilities and result in growth and advancement.

Employment opportunities exist with local, state and federal health, pollution control and/or enforcement agencies. The possibility of employment by private industrial concerns as a pollution abatement technician or in quality control also exists. Further opportunities lie in both public and private research and development activities, including design and refinement of pollution equipment and control processes. Finally, the graduate may elect to become a sales and/or service representative for firms which sell analysis and control equipment and supplies.

ENVIRONMENTAL TECHNOLOGY CURRICULUM
First Year

FALL

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ET 141</td>
<td>Contemporary Problems in Ecology</td>
<td>5</td>
</tr>
<tr>
<td>Eng. 111</td>
<td>Introductory Writing: Technical Emphasis</td>
<td>4</td>
</tr>
<tr>
<td>ET 142</td>
<td>General Biology</td>
<td>3</td>
</tr>
<tr>
<td>P.S. 101</td>
<td>Introduction to Politics</td>
<td>4</td>
</tr>
<tr>
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<td><strong>16</strong></td>
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WINTER

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET 143</td>
<td>General Zoology</td>
<td>3</td>
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<tr>
<td>Ph.Sc. 101</td>
<td>Intro. to Physical &amp; Earth Sciences I</td>
<td>5</td>
</tr>
<tr>
<td>AMS 121</td>
<td>Applied Mathematics</td>
<td>5</td>
</tr>
<tr>
<td>HPE 109</td>
<td>Personal Health</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
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SPRING

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ET 110</td>
<td>Microbiology for Water and Food</td>
<td>5</td>
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<tr>
<td>ET 121</td>
<td>Environmental Seminar</td>
<td>2</td>
</tr>
<tr>
<td>Ph.Sc. 102</td>
<td>Intro. to Physical &amp; Earth Sciences II</td>
<td>5</td>
</tr>
<tr>
<td>Eng. 112</td>
<td>Varieties of Writing: Technical Writing</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>
The continuing rapid growth of industrial and consumer electrical and electronic devices has resulted in an increased demand for personnel with a solid understanding of the principles and applications of electrical and electronic devices. The associate degree program in electronics engineering technology provides the student with a solid background in basic mathematics and science upon which he will build his technical competencies. The technical courses include fundamentals of electricity and electronics, communications, electrical instrumentation and measurements, industrial control systems, microwaves, and computer logic and circuitry.

Graduates of this program will be able to function in many industries as well as in component areas within a specific industry. These areas include communications, manufacturing, process control, installation and maintenance, research and development, industrial instrumentation, computer applications, and production and distribution of electrical power. Typical occupational titles would be electrical designer, research and development technician, sales representative, automation technician, engineering aide, customer service representative, field engineering technician, and electronics instrumentation technician.

ELECTRONICS ENGINEERING TECHNOLOGY CURRICULUM

First Year

FALL
IE&T 104 Design & Engineering Graphics I 4
IE&T 113 Materials Processing I 4
AMS 111 Mathematics-Physics I 6
Eng. 111 Introductory Writing: Technical Emphasis 4

WINTER
IE&T 114 Materials Processing II 4
AMS 122 Mathematics-Physics II 6
Eng. 112 Varieties of Writing: Technical Writing 4
Soc. 101 Principles of Sociology 4

TOTAL 18
SPRING
IE&T  191 Energy, Power, Instrumentation and Control—Mechanization  4
IE&T  347 Electricity  5
AMS  133 Mathematics-Physics III  6
Spch. 102 Principles of Speech  4
                                    19

Second Year
FALL
IE&T  244 Communication Circuits  3
IE&T  348 Electronics  5
CPS  101 Introduction to Computing I  5
Elective  4
                                    17

WINTER
IE&T  245 Communication Systems  3
IE&T  246 Electrical Amplifiers  5
IE&T  247 Electrical Measurements & Instrumentation  5
Econ. 200 Introduction to Economics  4
                                    17

SPRING
IE&T  248 Industrial Equipment and Controls  5
IE&T  249 Special Electronic Design Problems  4
IE&T  218 Management and Supervision  3
Psych. 201 General Psychology  5
                                    17
TOTAL 106

ELECTRO-MECHANICAL TECHNOLOGY

This program of study includes subjects from both electronics and mechanical fields and auxiliary or supporting courses in applied sciences, machines and machine processes, mathematics, technical report writing, mechanical measurements, communications and industrial management and supervision. Emphasis is placed on the practical application of electro-mechanical devices. Instruction is planned to provide preparation concerned with the design, development, and testing of electro-mechanical devices and systems such as automatic control systems and servo-mechanisms.

Graduates from this area of study will find employment as technicians in a variety of manufacturing, service and research organizations and government agencies. Some may be employed as laboratory technicians in support of scientific research and others may become engineering aids in the electro-mechanical field.

ELECTRO-MECHANICAL TECHNOLOGY CURRICULUM
First Year
FALL
IE&T  104 Design & Engineering Graphics I  4
IE&T  113 Materials Processing I  4
AMS  111 Mathematics-Physics I  6
Eng.  111 Introductory Writing: Technical Emphasis  4
                                    18

WINTER
IE&T  114 Materials Processing II  4
AMS  122 Mathematics-Physics II  6
Eng.  112 Varieties of Writing: Technical Writing  4
Econ. 200 Introduction to Economics  4
                                    18
DRAFTING AND DESIGN TECHNOLOGY

Because of the nature of the consumer market and the rapid advancement of technology, there exists a great need for industrial and mechanical design personnel within industry. The design of the product which ultimately appears on the market demands but a share of the designer’s time in preparation. Equally important is the design of the jigs, fixtures, dies, tools, mechanisms and machines necessary to economically produce the product.

Within the drafting and design technology curriculum, emphasis is placed on drafting only as a tool of communication. The student will receive in-depth experiences in operation, selection, and modification of existing mechanical devices and their applications to new products and machines necessary to produce them.

The student will complete the general core of mathematics, physics, communications, humanities, social sciences and related technical sciences to establish a base for specialization and for future development. Beyond that core, he will take courses in manufacturing processes, mechanisms, mechanical design, design for production and computer graphics.

The two-year program in drafting and design technology will prepare the graduate to enter industry in such positions as design draftsman, developmental laboratory technician, research or engineering assistant or designer.

DRAFTING AND DESIGN TECHNOLOGY CURRICULUM

First Year

FALL
IE&T 104 Design & Engineering Graphics I 4
IE&T 113 Materials Processing I 4
AMS 111 Mathematics-Physics I 6
Eng. 111 Introductory Writing: Technical Emphasis 4
TOTAL 18
### WINTER

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>IE&amp;T 114</td>
<td>Materials Processing II</td>
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</tr>
<tr>
<td>IE&amp;T 204</td>
<td>Design &amp; Engineering Graphics II</td>
<td>5</td>
</tr>
<tr>
<td>AMS 122</td>
<td>Mathematics-Physics II</td>
<td>6</td>
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<tr>
<td>Eng. 112</td>
<td>Varieties of Writing: Technical Writing</td>
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### SPRING

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<tr>
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<tbody>
<tr>
<td>IE&amp;T 191</td>
<td>Energy, Power, Instrumentation and</td>
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<td></td>
<td>Control—Mechanization</td>
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<tr>
<td>AMS 133</td>
<td>Mathematics-Physics III</td>
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<tr>
<td>CPS 101</td>
<td>Introduction to Computing I</td>
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<tr>
<td>Spch. 102</td>
<td>Principles of Speech</td>
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### Second Year

#### FALL

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<tr>
<td>IE&amp;T 214</td>
<td>Manufacturing Processes</td>
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<tr>
<td>IE&amp;T 241</td>
<td>Electricity and Electronics</td>
<td>3</td>
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<tr>
<td>IE&amp;T 242</td>
<td>Mechanics (Statics)</td>
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<td>IE&amp;T 304</td>
<td>Mechanical Design</td>
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#### WINTER

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<tr>
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<tr>
<td>IE&amp;T 243</td>
<td>Strength of Materials</td>
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<tr>
<td>Soc. 101</td>
<td>Principles of Sociology</td>
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<tr>
<td>Psych. 201</td>
<td>General Psychology</td>
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#### SPRING

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<tr>
<td>IE&amp;T 205</td>
<td>Tool and Die Design</td>
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<tr>
<td>IE&amp;T 206</td>
<td>Jig and Fixture Design</td>
<td>2</td>
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<td>IE&amp;T 207</td>
<td>Computer Graphics</td>
<td>3</td>
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<td>IE&amp;T 218</td>
<td>Management and Supervision</td>
<td>3</td>
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<tr>
<td>Econ. 200</td>
<td>Introduction to Economics</td>
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**TOTAL** 104

Planning for additional programs in career education has already begun for subsequent years, and will be announced as each is completed.
The Arabic number in parentheses immediately following the title of the course indicates the number of hours of credit given for the course.

A course which is preceded by the letter E is offered by extension. Information about these courses may be obtained from the Office of the Dean of Firelands Campus.

APPLIED MATHEMATICS AND SCIENCE

110. DEVELOPMENTAL MATHEMATICS (3). Algebraic manipulation and solution techniques, graphical analysis, simultaneous equations, exponential notation and logarithms, useful results from plane geometry. Two 1-hour lectures and two 1.5-hour recitations.

111. MATHEMATICS-PHYSICS I (6). Applications of algebra, graphical analysis, logarithms, geometry and trigonometry; scientific notation, measurements, units, computation aids and techniques. Laboratory emphasizes techniques of measurement and application of mathematical ideas. Two 2-hour lectures and two 2-hour laboratories.

121. APPLIED MATHEMATICS (5). Trigonometric functions, laws of sines and cosines, statistical analysis of data, application of matrices, mental arithmetic, use of slide rule, and application of basic calculus to maxima and minima, to approximation, and to computation of areas.

122. MATHEMATICS-PHYSICS II (6). Vectors, kinematics, dynamics, rotational dynamics, statics, conservation laws; application of calculus to maxima and minima, areas and approximation. Laboratory emphasis on mechanical measurements and devices. Two 2-hour lectures and two 2-hour laboratories.

133. MATHEMATICS-PHYSICS III (6). Thermal phenomena, electricity and magnetism and continued applications from previous mathematics. Laboratory emphasizes thermal and electromagnetic measurements and devices. Two 2-hour lectures and two 2-hour laboratories.

ART

101. INTRODUCTION TO ART (3). Introduction to the basic principles of art form, including experiences with the elements of graphic expression; a foundation course open to any student. Two lectures and two-hour studio.

102. ART FUNDAMENTALS (5). Introduction to the basic principles of art form, including experiences with the elements of graphic expression; a foundation course open to an art major or minor. Two lectures and three 2-hour studios.

103. DRAWING (3). Observation of natural objects as an aid to expressive draftsmanship. Six studio hours. Prerequisite or parallel: Art 101 or 102.

104. DRAWING (3). Art 103 continued. Principles of pictorial structure. Six studio hours. Prerequisite: Art 103.

112. BEGINNING DESIGN (3). Design theories as a basis for artistic expression. An introduction to three-dimensional design. Six studio hours. Prerequisite or parallel: Art 101 or 102 or consent of the instructor.

145. HISTORY OF WESTERN ART I (3). History of ancient and early medieval art.

146. HISTORY OF WESTERN ART II (3). Medieval, Renaissance, and Baroque art.

147. HISTORY OF WESTERN ART III (3). Nineteenth and twentieth century art.

205. BEGINNING DRAWING FROM LIFE (3). Principles and practice in
creative and structural drawing; development of the concepts and techniques required to accomplish competent graphic expression. Prerequisite: Art 104.

211. INTERMEDIATE DESIGN (3). Practice in problems of formal design, lettering, and layout. Six studio hours. Prerequisite: Art 101 or 102 or consent of the instructor.

212. INTERMEDIATE DESIGN (3). Exploration problems with an orientation toward product design. Six studio hours. Prerequisite: Art 104 or consent of the instructor.

213. INTERMEDIATE DESIGN (3). Studio problems in environmental concepts specifically related to interior and exterior spaces. Six studio hours. Prerequisite: Art 104 or consent of the instructor.

ARTS AND SCIENCES

100. SEMINAR IN ARTS AND SCIENCES: PRINCIPLES OF PLAY PRODUCTION (4). Basic principles of theory and technique in designing, acting, and directing a play. Special projects assigned on topics like stage settings, characterization, and rehearsing a play. Attention will be given to individual needs. Laboratory hours to be arranged.

BIOLOGY

101. GENERAL BIOLOGY: MAN AND HIS ENVIRONMENT (5). Fundamental principles of biology and their relation to man and his environment. Emphasis on present environmental problems of air, water and land pollution, human reproduction, population dynamics and modern health problems. Three 1-hour lectures, two 1-hour laboratories. Not accepted toward a biology major or minor.

104. GENERAL BIOLOGY (5). A course in fundamental principles and concepts of biology. Three 1-hour lectures, two 1-hour laboratories. Not accepted toward a biology major or minor.

106. GENERAL BOTANY AND MICROBIOLOGY (3). Fundamental principles of botany and microbiology at the organismic level; processes, morphology, life cycles and phylogeny of plants and microorganisms. Two lectures and one 2-hour laboratory. May be taken concurrently with Biology 107.

107. GENERAL ZOOLOGY (3). Fundamental principles of zoology at the organismic level; processes, morphology, life cycles and phylogeny of animals. Two lectures and one 2-hour laboratory. May be taken concurrently with Biology 106.

208. BASIC PHYSIOLOGY (5). Introduction to the study of functional properties of living things. Four lectures, one 3-hour laboratory. Prerequisite: Biology 106, 107, and one quarter of laboratory chemistry which may be taken concurrently.

213. ENVIRONMENTAL BIOLOGY (5). Introduction to the study of living organisms in relation to their environment and the fundamental principles of ecology. Three lectures, one 2-hour and one 3-hour laboratory. Prerequisite: Biology 106, 107, and one quarter of laboratory chemistry which may be taken concurrently.

E321. ECONOMIC BIOLOGY I (4). Ecological aspects of control of invertebrate animals, the chemistry and action of insecticides and herbicides, equipment and methods of the pest control industry, and roles of various governmental agencies. Three 2-hour periods per week. Prerequisite: 15 hours of biology.

E322. ECONOMIC BIOLOGY II (4). Ecological aspects of control of vertebrate animals; the chemistry and action of rodenticides; rodent, predator, and bird controls; zoonoses, public health sanitation, and sanitary biology; and roles of various governmental agencies. Three 2-hour periods per week. Prerequisite: 15 hours of biology.

BUSINESS ADMINISTRATION

102. INTRODUCTION TO BUSINESS (4). A background for American business—the market, competition and change, the nature and central role of management, our business environment.
Three class periods plus assigned laboratories.

230. RECORDS MANAGEMENT (3). Principles of paperwork control in an organization from the creation of records to their final storage or destruction.

240. BUSINESS PROBLEMS OF THE CONSUMER (4). Relationship of business practices to consumer activities. Ways of improving standard of living of individuals and groups through developing competencies in buying, using goods and services, money management.

E311. DICTATION AND TRANSCRIPTION (3). Dictation at high speed rates with emphasis on rapid and accurate transcription. Prerequisite: Business Education 112, 215 or equivalent.

E312. ADVANCED DICTATION AND TRANSCRIPTION (3). Development of a technical vocabulary, short cuts to speed dictation, and office-style dictation. Prerequisite: Business Education E311.

E314. INTERNSHIP IN BUSINESS EDUCATION (1-3). Supervised experience in local offices or businesses. Forty clock hours of work required for each hour of college credit. May be repeated to 3 hours. No more than 1 hour of credit may be granted for work in any one office or business firm.

E321. DATA PROCESSING II (3). Introduction to punch card and other input-output media in automated data processing. Practice in using unit record equipment. Introduction to computers and computer languages. Three class periods plus assigned laboratories.

E401. SECRETARIAL ADMINISTRATION (5). An intensive study of the procedures, skills, and knowledge which are the basis for administrative level positions. Prerequisite: Business Education 210, 311.

BUSINESS LAW

100. INTRODUCTION TO CHEMISTRY (4). A non-laboratory course; not open to a major or minor in chemistry.

111. ELEMENTARY CHEMISTRY (4). Three lectures and one 3-hour laboratory. Not accepted toward a chemistry major or minor unless followed by Chemistry 122. Prerequisite: two years of high school science and/or mathematics.

112. GENERAL CHEMISTRY (5). Two lectures, one recitation, and four hours of laboratory. Prerequisite: Chemistry 111 or 121.

121. GENERAL CHEMISTRY (5). Chemistry 121 continued. Approximately one-half quarter is devoted to qualitative analysis. Two lectures, one recitation, and four hours of laboratory. Prerequisite: Chemistry 122.

122. GENERAL CHEMISTRY (5). Chemistry 122 continued. A brief introduction to organic chemistry, with some biochemistry. Prerequisite: Chemistry 112 or, with consent of instructor, Chemistry 123. Not recommended for science majors. Credit may not be received for both Chemistry 213 and Chemistry 306. Three lectures and one three-hour laboratory per week.

201. QUANTITATIVE ANALYSIS (5). Gravimetric and volumetric analysis. Three lectures, six hours of laboratory. Prerequisite: Chemistry 123.

213. BIO-ORGANIC CHEMISTRY FOR NON-SCIENCE MAJORS (4). Chemistry 112 continued. Not open to chemistry majors. Credit may not be received for both Chemistry 213 and Chemistry 306. Three lectures and one three-hour laboratory per week.

Note: A student may not receive credit for more than one course in any of the following groups: Chemistry 100, 111, 121; Chemistry 112, 122.

COMPUTER SCIENCE

101. INTRODUCTION TO COMPUTING I (5). Algorithms; flowcharting; basic elements of a higher-level language; introduction to computer organization and machine language. Analysis of several numerical and non-numerical problems and their solutions using a higher level language. Use of an interactive programming system.

102. INTRODUCTION TO COMPUTING II (5). Continued study and use of the programming language learned in Computer Science 101 involving projects in simulation, applications in computer science and use of various data and storage structures. Numeration systems. Assembly language for a hypothetical machine. Prerequisite: Computer Science 101.

201. COMPUTERS AND PROGRAMMING I (4). Computer structure, data representation, system software bootstrap loaders, assemblers, relocatable loaders, interpreters; principles of programming loops, subroutines and macros; recursion, reentrant programs; the assembler language of a typical small computer. Prerequisite: Computer Science 101.

203. LOGICAL FOUNDATIONS OF COMPUTING (4). Topics from basic set algebra, algebraic structures, Boolean Algebra; and graph theory with applications of the concepts in computer science. Prerequisite: Computer Science 102.

COMPUTER SCIENCE TECHNOLOGY

131. ELECTRONIC DATA PROCESSING LABORATORY I (4). Continued theory and the development of programming, operational procedures and data processing skills. The student will be scheduled for computer use time with instructor assistance. Eight hours of laboratory a week.

212. ELECTRONIC DATA PROCESSING LABORATORY II (2). Continued theory and the development of programming, operational procedures and data processing skills. The student will be scheduled for computer use time with instructor assistance. Four hours of laboratory.

221. SYSTEMS AND PROCEDURES I (3). Analysis of business information
systems with consideration given to designing a business system, file design and audit controls. Techniques for implementing basic systems such as principles of flowcharting, systems documentation and business forms control. Two hours of lecture and two hours of laboratory.

231. ELECTRONIC DATA PROCESSING SEMINAR (4). Special readings and guided study on topics of particular interest to graduating students. One hour of consultation and six hours of independent laboratory experience.

232 SYSTEMS AND PROCEDURES II (3). Continued study of principles in the design and applications of data processing systems in business. Analysis of cost controls, operations research and the integrated management information system.

233. ELECTRONIC DATA PROCESSING LABORATORY III (6). This course gives the student an opportunity to initiate and carry out a project selected from outside the school. The design and implementation of this project will be the responsibility of the student with minimum instructor assistance.

260. TECHNIQUES OF COBOL PROGRAMMING (4). Detailed study of the COBOL programming language and techniques for its use: execution-time program structures; segmentation; overlays; report generation; table handling; sorting; file handling techniques; comparison with other languages; COBOL standards.

ECONOMICS

200. INTRODUCTION TO ECONOMICS (4). Government expenditures and taxation, money and banking, poverty, capitalism and its alternatives. Economic impact of large corporations. Not open to the student who is required to complete Economics 201.

201. PRINCIPLES OF ECONOMICS (4). Nature of economics; fundamentals of supply and demand; national income and employment; the banking system; monetary and fiscal policy; economic growth and stabilization. Prerequisite: sophomore standing.


ENGLISH

COURSES IN ENGLISH

111. INTRODUCTORY WRITING (4). Spontaneous and structured writing of the informal essay with emphasis on basic writing skills. Placement by ACT scores and essay.

112. VARIETIES OF WRITING (4). Development of writing skills, including documentation, with specific subject sub-titles (Creative Writing, American Values in Transition, for example). Placement by ACT scores and essay or successful completion of English 111.

150. RESPONSE TO LITERATURE (4). An introductory course designed for all students; response to themes in poetry, drama, fiction, non-fiction, and other literary types. Accepted toward English major or minor as an elective.

161. WORLD LITERATURE (4). Masterpieces of world literature to 1400, including such authors as Homer, Confucius, Aeschylus, Sophocles, Plato, Aristophanes, Virgil, and Dante.

162. WORLD LITERATURE (4). Masterpieces of world literature since 1400, including such authors as Montaigne, Cervantes, Goethe, Hugo, Balzac, Dostoyevski, Kafka. Not open for credit to a student who has received credit for English 161 before June, 1965.

200. LITERATURE: (Sub-title) (4). A course organized on a single topic, such as Black Literature, Women in Literature, the Hero in Literature, the Businessman in Literature, Poetry and Music. Can be repeated once for credit if topic is different. Accepted toward the English major or minor as an elective. Prerequisite: English 112.

200. THE EXPERIENCE OF LITERATURE (5). Designed primarily for the non-English major; thematically focused, this course examines poetry, drama, fiction, non-fiction,
etc., as it treats human experience. Not accepted toward English major or minor, except as an elective. Prerequisite: English 112.

202. INTRODUCTION TO POETRY (4). Study of poetry as a type of literature through a selection of great poems, past and present. Prerequisite: English 112.

203. INTRODUCTION TO DRAMA (4). Study of drama as a type of literature through a selected group of representative plays, past and present. Prerequisite: English 112.

204. INTRODUCTION TO FICTION (4). A study of fiction designed to develop appreciation of the short story and the novel as literary forms. Prerequisite: English 112.

208. CREATIVE WRITING (4). Supervised writing in both poetry and fiction, with group discussion and concentration on the shorter forms. May be repeated once. Prerequisite: English 112 or equivalent.

251. WRITING ABOUT FILMS (4). A writing course in which the same amount of writing is included as in English 207, but it deals entirely with film theory, films, film scripts, novels on which films are based, and film reviews. Equivalent of English 207. Prerequisite: English 112 or equivalent.

COURSES IN POPULAR CULTURE

160. INTRODUCTION TO POPULAR CULTURE (4). Examination of the basic theories of, approaches to, and topics within the study of popular culture. Emphasis will be on several selected topics in popular culture and the use of various theories and approaches in the study of these topics.

260. POPULAR CULTURE AND THE MEDIA (4). Examination of the various types of culture and media which affect our lives— their artistic and aesthetic accomplishments and failures, their obvious and subtle forces and influences. Prerequisite: English 112 or equivalent.

ENVIRONMENTAL TECHNOLOGY

110. MICROBIOLOGY FOR WATER AND FOOD (5). An introduction to the fundamentals of microbiology pertinent to food storage and servicing and water and waste water treatment. Three hours of lecture and four hours of laboratory. Prerequisite: Physical Science 101: one course in biology.

121. ENVIRONMENTAL SEMINAR (2). Discussion of current topics in environmental technology.

141. CONTEMPORARY PROBLEMS IN ECOLOGY (4). Biological implications of man's effect on the environment. Introduction to environmental problems of air, water, and land pollution as they relate to the environmental technologist.

142. ENVIRONMENTAL BOTANY (3). General survey of the plant kingdom with emphasis on those groups most associated with environmental problems and the technologist. Two hours of lecture and two hours of laboratory.

143. ENVIRONMENTAL ZOOLOGY (3). General survey of the animal kingdom with emphasis on those groups most associated with environmental problems and the technologist. Two hours of lecture and two hours of laboratory.

210. BIOLOGICAL EFFECTS OF AIR POLLUTION AND BATS FOR QUALITY STANDARDS (3). Sources and forms of air pollution, physiological responses of target organisms, and the nature of air standards. Prerequisite: sophomore standing in Environmental Technology.

214. SANITARY CHEMISTRY FOR WATER (5). Theory and laboratory techniques for all control tests of water purification including: bacteriology, color, turbidity, pH, alkalinity, hardness, coagulations, chlorides, fluorides, iron, manganese, detergents, bactericides and nitrates. Three hours of lecture and four hours of laboratory or field trips.

220. WATER SUPPLY AND WASTE WATER CONTROL (5). An introduction to the elementary engineering aspects of water supply and distribution; waste water collection, removal and disposal. Three hours of lecture and four hours of laboratory or field study. Prerequisite: sophomore standing in Environmental Technology.
21. ENVIRONMENTAL SEMINAR II (2). Discussion of legal and organizational aspects of pollution control.

243. ENVIRONMENTAL BIOLOGY (3). Introduction to the fundamental principles of ecology with emphasis on aquatic and terrestrial ecosystems. Two hours of lecture and two hours of laboratory.

260. METHODS OF CONTROL OF INDUSTRIAL AIR POLLUTANTS (5). Techniques and equipment used in modern air quality programs. Three hours of lecture and four hours of laboratory.

EXPERIMENTAL STUDIES

101, 301. SEMINAR (4). Offered on various topics. May be repeated to 16 hours.

GEOGRAPHY

121. WORLD GEOGRAPHY I: EURASIA AND AFRICA (4). Geographical analysis of selected topics in Asia, Africa, and Europe. The ecological aspects of the cultural, political, and economic problems of these regions are emphasized. Open only to a freshman or a sophomore.

122. WORLD GEOGRAPHY II: THE AMERICAS AND THE PACIFIC (4). Analysis of aspects of geography concerned with man and his interrelationships with his physical environment. Open only to a freshman or sophomore.

125. WEATHER AND CLIMATE (4). Fundamentals of physical geography with emphasis on earth-sun relationships, elements of weather and climate, and climatic types and their distribution. Three 1-hour lectures and one 2-hour laboratory.

126. VEGETATION AND SOILS (4). Fundamentals of physical geography with emphasis on distribution and classification of vegetation and soil and the representation of the earth on maps. Three 1-hour lectures and one 2-hour laboratory.

127. LANDFORM DEVELOPMENT AND DISTRIBUTION (4). Fundamentals of physical geography with emphasis on processes of landform development, world-wide distribution of landforms, and physiographic features and regions of the U.S. Three one-hour lectures and one two-hour laboratory. Geography 126 is recommended.

213. METEOROLOGY (4). Fundamental physical processes of the atmosphere and their relationship to the daily weather pattern. Prerequisite: Geography 125 or consent of the instructor.

225. ECONOMIC GEOGRAPHY (4). Systematic study of world distribution of the primary, secondary, and tertiary activities of mankind with emphasis on geographic and economic factors affecting the distribution and location of economic activity.

230. CULTURAL GEOGRAPHY (4). Introduction to cultural geography stressing definition of cultural elements of the landscape and their distribution and interpretation.

244. ELEMENTS OF PHYSICAL GEOGRAPHY AND SURVEYING (5). An introduction to climate, soil, and vegetation; their classification and distribution with emphasis on their interrelationships. Other topics include the principles of surveying and field practice. Three hours of lecture and four hours of laboratory.

GEOLGY

100. INTRODUCTION TO GEOLOGY (4). The earth; physical and historical geology; and the economic, social and philosophic aspects of the subject matter. Not open to a geology major or minor. Credit is not given for both Geology 100 and Geology 103 or 104.

103. GEOLOGIC MATERIALS (4). Introduction to common rocks and minerals and their mode of occurrence and origin. Three lectures and one 2-hour laboratory; one field trip is required. Credit is not given for both Geology 100 and 103.

104. GEOLOGICAL PROCESSES (4). Survey of the physical processes operating on and in the earth and of the landforms and geologic structures developed. Three lectures and one 2-hour laboratory; one field trip is required. Credit is not given for both Geology 100 and 104.
105. PRINCIPLES OF HISTORICAL GEOLOGY (4). Principles of stratigraphy, time, and evolution upon which the reconstruction of geologic history is based. Three lectures and one 2-hour laboratory; one field trip is required.

210. INTRODUCTION TO ASTRONOMY (4). Description and discussion of the solar system, local stars and clusters, nebulae, galaxies, and the universe; modern cosmogonies and the limitations for the existence and evolution of life, and methods of celestial observations.

HEALTH AND PHYSICAL EDUCATION

100. GENERAL PHYSICAL EDUCATION (1). Each freshman must complete three units from a wide selection of activities such as golf, tennis, swimming, etc. Two hours a week.

109. PERSONAL HEALTH (3). A basic course in personal hygiene.

110. COMMUNITY HEALTH (2). A basic course in all aspects of community health.

HISTORY

151. WORLD CIVILIZATION: TO 1300 (4). A broad cultural survey of the ancient Near Eastern and Eastern civilizations; Greece and Rome; medieval life and institutions; Asian civilization to 1300. A general introduction to the study of history; should be followed by History 152, 153.

152. WORLD CIVILIZATION: 1300 TO 1815 (4). History 151 continued. Renaissance, Reformation; Age of Reason; commercial and industrial revolutions; Asian civilization, sixteenth-nineteenth centuries; English and French revolutions.

153. WORLD CIVILIZATION: 1815 TO PRESENT (4). History 152 continued. Liberalism and nationalism; imperialism and world conflict; nineteenth and twentieth century science and culture; the world in the present age.

205. THE UNITED STATES TO 1865 (4). A survey of the political, constitutional, economic, and cultural development of the U. S. from its early settlement to the close of the Civil War.


280. ASIAN CIVILIZATION (4). A broad survey of history and civilizations of the major countries of Asia from the beginning to the present. Designed especially for beginners. Interdisciplinary approach.

HOME ECONOMICS

101. CLOTHING (3). Fundamentals of clothing construction using commercial patterns. Elements and principles of design related to clothing and wardrobe planning. One 1-hour period and two 2-hour periods.

102. CLOTHING (3). Home Economics 101 continued with emphasis on custom methods. Socio-psychological and economic aspects of clothing for the individual and the family. One 1-hour period and two 2-hour periods.

103. TEXTILES (4). Basic facts concerning fibers, yarns, and cloth construction; finishes; color and design; production costs; wearing qualities. Selection, buying, and care of fabrics for personal and household uses. Three 1-hour periods, and one 2-hour period.

105. PERSONAL AND FAMILY RELATIONSHIPS (4). Growth and development of the college student as an individual and in social relationships in the family, college, community; activities and functions of the present-day family.

120. SURVEY OF CHILD AND FAMILY COMMUNITY SERVICES (3). An introduction survey of the institutions serving young children and families. Consideration of the principles underlying effective services, including the qualifications and preparation essential for professional work with people. Two hours of lecture and two hours of participation.
205. HOME MANAGEMENT (4). The effect of values and philosophy on decisions regarding the use of family resources; time, energy, knowledge, ability, skills, and attitudes as they are used to achieve family goals. Principles of work simplification, history of discipline, and evaluation in home management.

206. HOUSEHOLD EQUIPMENT (4). Selection, operation, care, and arrangement of household equipment for safe operation and effective management. Prerequisite: Home Economics 205.


INDUSTRIAL EDUCATION AND TECHNOLOGY

104. DESIGN AND ENGINEERING GRAPHICS I (4). Design as a process and engineering graphics as a vehicle to communicate problem solutions. Design analysis, sketching and instrument drawing applied to design problems involving industry and technology. Two hours of lecture and five hours of laboratory.

113. MATERIALS PROCESSING I (4). Processing equipment, methods, operations, procedures and design utilized in the production of non-metallic products; raw materials sources; and methods of conversion. Two hours of lecture and five hours of laboratory.

114. MATERIALS PROCESSING II (4). A study of material properties, fabricating equipment, and methods and procedures utilized in the production of metallic products. Two hours of lecture and five hours of laboratory.

121. INDUSTRIAL MATHEMATICS (5). Mathematics as applied in industry and technology. Problems in geometry, algebra, trigonometry, and calculus.

152. FOUNDATIONS OF INDUSTRIAL EDUCATION AND TECHNOLOGY (2). Evolution, roles, and interrelationships of the several forms of industrial education, emphasizing relationships to general education and technological and industrial development.

191. ENERGY, POWER, INSTRUMENTATION, AND CONTROL - AUTOMATION (4). Study of automation through the examination of energy conversion into useful electrical, fluid of mechanical power and associated transmission, instrumentation and controlling devices. Two hours of lecture and five hours of laboratory.

202. MECHANICAL DESIGN II (4). A continuation of Mechanical Design I. Consideration of economy, loading conditions, stresses, deformation, fits and finishes in design. Two hours of lecture and five hours of laboratory.

204. DESIGN AND ENGINEERING GRAPHICS II (5). The application of design analysis and engineering graphics, including descriptive geometry, vector analysis and graphical mathematics. Design problems in power generation and transmission, construction and manufacturing. Two hours of lecture and six hours of laboratory.

205. TOOL AND DESIGN (4). Study of the importance and economies of tool design for mass production. Major areas include the layout and design of cutting tools, gauges, simple jigs, fixtures and dies. Two hours of lecture and five hours of laboratory.

206. JIG AND FIXTURE DESIGN (2). Continued application of the principles of jig and fixture design, including drilling, milling, welding and inspection fixtures; standard drill jigs, and economies of jigs and fixtures. One hour of lecture and three hours of laboratory.

207. COMPUTER GRAPHICS (3). Consideration and application of modern techniques and equipment used in computer-controlled drafting. Two hours of lecture and three hours of laboratory.

208. GRAPHIC COMMUNICATIONS (4). Broad exploration in the graphic communications area. Study and experience in design, copy preparation, photo-conversion, image carriers, and image transfer methods. Two hours of lecture and five hours of laboratory.
210. **FLUID SYSTEMS (3).** A study of the basic components of hydraulic and pneumatic systems as used for industrial power control and transmission. Two hours of lecture and three hours of laboratory.

211. **MANUFACTURING PROCESSES I - FORMING (4).** An introduction to both traditional and non-traditional forming processes. Topics include spinning, casting, die-casting, forging and extruding. Two hours of lecture and five hours of laboratory.

212. **MANUFACTURING PROCESSES II - COMBINING (4).** An introduction to non-traditional joining processes such as electric arc, inert gas, subaeraged arc and oxygen-acetylene welding; and non-traditional processes such as plasma arc, explosive, laser ultrasonic and electron beam methods of combining materials. Two hours of lecture and five hours of laboratory.

213. **NON-TRADITIONAL MANUFACTURING PROCESSES III (4).** An introduction to non-traditional machining processes including numerical control, EDM, ECM, laser machining, ion machining and ultrasonic machining. Two hours of lecture and five hours of laboratory.

214. **MANUFACTURING PROCESSES (4).** Processing methods, equipment, tooling organization and control employed in production of metallic and non-metallic products. Two hours of lecture and five hours of laboratory.

215. **METALLURGY (4).** Introduction to the basic concepts of physical metallurgy and heat treatment of metals. Topics include metal structure, alloys, tempering, tool steels and powder metallurgy. Two hours of lecture and five hours of laboratory.

216. **METROLOGY (4).** Study of instruments and machines for measuring dimensions and surface finishes of machine parts to meet established standards. Discussion of the concepts and procedures involved in quality control and inspection. Two hours of lecture and five hours of laboratory.

217. **PRODUCTION PLANNING AND CONTROL (4).** Detailed study of various production activities and the problems associated with them through the use of case studies and personal experiences of guest speakers.

218. **MANAGEMENT AND SUPERVISION (3).** Discussions of the responsibilities of management and supervision within the manufacturing industries. Topics include organization, duties and responsibilities, human relations, training, promotion, quality and quality control and management-employee relations.

224. **GRAPHICS (3).** An introduction to graphic communications for Environmental Technology majors. Topics include graphic fundamentals, elementary surveying and topographical mapping. Two hours of lecture and three hours of laboratory.

235. **CONSTRUCTION TECHNOLOGY (4).** Construction problems and orderly solutions of problems related to construction, including architectural representation, conventions, construction procedures and building estimation. Three hours of lecture and three hours of laboratory.

241. **ELECTRICITY AND ELECTRONICS (3).** Investigation of many topics in electricity and electronics of interest to students majoring in related technical areas. Content ranges from basic electricity to industrial instrumentation and control. Two hours of lecture and three hours of laboratory.

242. **MECHANICS (STATICS) (4).** Application of the laws of equilibrium as introduced in Mathematics-Physics II. Topics include planar and coplanar force systems, structure analysis, trusses, friction, centroids, moments of inertia and vector solutions.

243. **STRENGTH OF MATERIALS (4).** A comprehensive study of simple and combined stresses, deformation, shear, torsion and deflection of machine parts and structural members. Three hours of lecture and three hours of laboratory.

244. **COMMUNICATION CIRCUITS (3).** An introduction to fundamental communication circuits. Topics include amplifiers, oscillators, communication components and principles of receivers and transmitters. Two hours of lecture and three hours of laboratory.

245. **COMMUNICATIONS SYSTEMS (3).** Applications of the principles of
ommunications circuits to large and complex systems. Techniques of transmission and radiation of electromagnetic energy applied to pulse, television and microwave systems. Two hours of lecture and three hours of laboratory.

246. ELECTRONIC AMPLIFIERS (5). A study of representative principles of electronic amplification including experience in the techniques and skills required for the use and understanding of the devices encountered in electronic amplification and amplifiers. Three hours of lecture and five hours of laboratory.

247. ELECTRICAL MEASUREMENTS AND INSTRUMENTATION (5). A study of electrical measurement and instrumentation devices, transducers and elements; the principles underlying their design, use and relationships. Three hours of lecture and five hours of laboratory.

248. INDUSTRIAL EQUIPMENT AND CONTROLS (5). Basic elements of automation and industrial control principles. Includes discussion and application of typical devices such as time control switches, motor controls, servomechanisms and photoelectric switches. Three hours of lecture and five hours of laboratory.

249. SPECIAL ELECTRONIC DESIGN PROBLEMS (4). A study of new materials, techniques, components and devices which may have significant influence on the electronics industry. The student will have the opportunity to demonstrate his knowledge of electricity through solution of individual design problems. Six hours of recitation-laboratory.

291. ENERGY, POWER, INSTRUMENTATION AND CONTROL - CYBERNETICS (4). The study of cybernetics through the examination of systems logic, instruments, control and process regulation. Experiences in research and development requiring analysis and diagnosis of cybernetics systems. Two hours of lecture and five hours of laboratory.

E304. MECHANICAL DESIGN (4). Design and selection of mechanical elements, fasteners, power transmitting devices, hydraulic systems and tools and dies. Standard manuals and commercial catalogs are utilized. Two hours of lecture and five hours of laboratory.

E305. PRINCIPLES OF ORGANIZATION AND MANAGEMENT (4). Fundamentals of organization theory; objectives, policies, decision-making authority, executive development, leadership, communication, attitude, and effective human relations as they are related to management principles.

E306. PRODUCTION AND OPERATIONS MANAGEMENT (4). Operations of the firm; fundamentals of operations research; design of production systems; operation, coordination, and control of production activity; major analytical tools for management; plant projects. Prerequisite: Statistics 212 or equivalent.

E347. ELECTRICITY (5). Fundamental concepts of electricity including circuits and circuit concepts, power generation, alternating and direct current, meters, and test equipment. Two hours of lecture and six hours of laboratory.

E348. ELECTRONICS (5). Semiconductors, electron tubes, and related circuits. Applications of power supplies, amplifiers, oscillators, and transmission and receiving systems. Two hours of lecture and six hours of laboratory.

JOURNALISM

103. INTRODUCTION TO MASS COMMUNICATIONS (4). Survey of modern journalism, including the newer mass communications media. Role and influence of the press, radio, television, and related fields of advertising and public relations.

LIBRARY AND EDUCATIONAL MEDIA

203. INTRODUCTION TO LIBRARIANSHIP (4). The history of books and libraries, the growth of the profession, types of libraries in the modern world, and varieties of library organization.

MANAGEMENT

E300. PRODUCTION AND OPERATIONS MANAGEMENT (4). Operations of the firm; fundamentals of operations research; design of production systems; operation, coordination, and control of production activity; major analytical tools for management; plant projects. Prerequisite: Statistics 212 or equivalent.

E305. PRINCIPLES OF ORGANIZATION AND MANAGEMENT (4). Fundamentals of organization theory; objectives, policies, decision-making authority, executive development, leadership, communication, attitude, and effective human relations as they are related to management principles.

MATHEMATICS

The student should enter the mathematics program at the point
most appropriate to his preparation, interests, and course of study. Brief descriptions of the various options are given below to facilitate the choice of courses by the student and his adviser.

Mathematics 131-231-232 is the traditional calculus sequence for the well-qualified student and is a prerequisite for all upper division mathematics courses. Mathematics 130 is intended for the student who has an inadequate mathematics background for this sequence.

Mathematics 124-125 is a concept-oriented calculus and linear algebra sequence for students in the social and managerial sciences designed to prepare them for math-oriented courses in their areas.

Mathematics 121 and 122 are terminal courses designed to expose the student to selected topics in modern mathematics which lend themselves to treatment at a relatively unsophisticated level.

Where a course is listed as a prerequisite to another course, a grade of C or better is required. This requirement is in the best interest of the student and exceptions are made only with the consent of the instructor and the Chairman of the Mathematics Department.

121. TOPICS IN MODERN MATHEMATICS (5). The language of sets, introductory logic, and a study of the integers and rational numbers. Not open to the student who presents three or more years of high school mathematics or who has credit for any other college mathematics course. Prerequisite: one year of high school algebra.

122. FINITE MATHEMATICS (5). Logic; set theory; finite probability theory; vectors, matrices and their applications in probability theory; finite Markov chains, game theory; Prerequisites: three years of high school mathematics of consent of Department Chairman.

124. ELEMENTARY ANALYSIS I (5). Sets, functions, differential and integral calculus for functions of one variable with applications to the management and social sciences. Prerequisite: three years of high school mathematics or two years of high school algebra or consent of Chairman.

125. ELEMENTARY ANALYSIS II (5). Continuation of Mathematics 124 including topics in matrix algebra, differential and integral calculus for functions of more than one variable with applications to the management and social sciences. Prerequisite: Mathematics 124 or Mathematics 131.

130. PRECALCULUS MATHEMATICS (5). Real and complex number systems, functions, coordinate geometry, and trigonometry. Not open to the student who presents four years of high school mathematics and has an ACT mathematics score of 26 or higher.

131. ANALYTICAL GEOMETRY AND CALCULUS (5). Plane analytic geometry and calculus of functions of one variable. Prerequisite: four years of high school mathematics and an ACT mathematics score of 23 or higher or a grade of C or better in Mathematics 130 or consent of the department chairman.

211c (5) 131.

231. ANALYTIC GEOMETRY AND CALCULUS (5). Continuation of Mathematics 131. Prerequisite: Mathematics 131.

232. ANALYTIC GEOMETRY AND CALCULUS (5). Continuation of Mathematics 231. Prerequisite: Mathematics 231.

241. ELEMENTARY MATHEMATICS (5). Set theory; set theoretic development of the natural numbers; numeration systems; rational numbers. For an elementary education major only. Not for Arts and Sciences credit.

242. ELEMENTARY MATHEMATICS (4). Percentage and its applications, an introduction to algebra and geometry, and mensuration. For an elementary education major only. Prerequisite: Mathematics 241.

* A student with an ACT mathematics score of 23, 24, or 25 should consult with his adviser or a mathematics department representative to decide between Math 130 or 131.
238. FIRELANDS CONCERT BAND (1). Open to any student possessing necessary musical ability who is interested in playing in concert band. The band makes appearances at school programs and other public affairs.

279. UNIVERSITY CHORUS (1). Open to any student possessing necessary musical ability who is interested in singing with large ensembles. Chorus makes appearances at school programs and other public affairs.

PHILOSOPHY

100. EXPERIMENTS IN PHILOSOPHY (4). An examination of various topics in philosophy. Subject matter will be designated in the time schedule. Experiments in teaching and subject matter are encouraged. Restricted to freshmen and sophomores. A student may take Philosophy 100 for credit each time the subject area changes.

101. INTRODUCTION TO PHILOSOPHY (4). A discussion of the principal problems of philosophy: the existence of God, mind-body, origin and validity of knowledge, and freedom and determinism. Restricted to a freshman or sophomore student.

202. ETHICS (4). Inquiry into the meaning of good and evil and right and wrong in the context of contemporary moral issues. A senior may take this course only with the permission of the instructor.

204. AESTHETICS (4). Nature and meaning of "beauty," approached historically and applied to present-day experience. Courses in art, music appreciation, and history are beneficial. A senior may take the course only with the permission of the instructor.

205. LOGIC (4). Analysis of different kinds of arguments, informal fallacies, and deductive relationships among statements. A student who has credit for Philosophy 303 may not register for this course.

230. THE LOGIC OF SCIENCE (4). Analysis of inductive reasoning including analogical and statistical arguments, and the logic of confirmation.

PHYSICS

100. INTRODUCTION TO PHYSICS (4). Designed primarily for the non-science student; major principles and concepts of physics with emphasis on the scientific approach to problems. This course cannot be used as part of a major or minor.

PHYSICAL SCIENCE

101. INTRODUCTION TO PHYSICAL AND EARTH SCIENCES I (5). Scientific method, measurement and presentation of data, motion, electricity and magnetism, atoms and molecules, fundamental chemical problems. Emphasis on application to industry and environment. Four hours of lecture-recitation and three hours of laboratory.

102. INTRODUCTION TO PHYSICAL AND EARTH SCIENCES II (5). Chemical properties of substances important to the environment, X-rays and radioactive activity, light and sound. Emphasis on application to industry and environment. Four hours of lecture-recitation and three hours of laboratory.

103. INTRODUCTION TO PHYSICAL AND EARTH SCIENCES III (5). Weather, rocks, geologic processes, geologic time, air and water pollution, distribution and extraction of natural resources. Four hours of lecture-recitation and three hours of laboratory or field trips.

POLITICAL SCIENCE

101. INTRODUCTION TO POLITICS (4). Study of fundamental concepts and problems of politics. The enduring questions of politics are examined by analyzing contemporary political problems and by comparing a wide variety of modern political institutions in many different cultures. Restricted to freshmen and sophomores. Required of majors.

201. AMERICAN GOVERNMENT: PROCESSES AND STRUCTURE (4). Introductory study of constitutional basis and development, political processes
(parties, nominations and elections, interest groups, public opinion), and organization of the American governmental system.

202. AMERICAN GOVERNMENT: FUNCTIONS AND POLICIES (4). An examination of centers of policy making and legislation, programs, and issues in selected areas of public policy, such as economic policies, urban problems, education, poverty, environmental protection, civil rights, foreign affairs and national defense.

PSYCHOLOGY

201. GENERAL PSYCHOLOGY (5). A broad introductory course which is a prerequisite to all courses in the department. Considerations of the scientific approach to the study of behavior, with applications to personal and social behavior. A student is expected to participate in departmental research. Open to a freshman psychology major.


QUANTITATIVE ANALYSIS AND CONTROL

ACCOUNTING

221. PRINCIPLES OF ACCOUNTING (4). The accounting methodology for accumulation of business data and reporting of financial activities with emphasis on the accounting system as a control over data validity and business operations. Prerequisite: completion of Mathematics 125 or 231, or preferably, concurrent registration in Mathematics 125 or 231, or consent of instructor.

222. PRINCIPLES OF ACCOUNTING (4). The continuation of Accounting 221 with emphasis on special problems of accounting valuation. Interpretation and use of accounting reports in making business decisions. Prerequisite: Accounting 221.

STATISTICS

111. ELEMENTARY STATISTICAL METHODS I (4). Analysis of basic data frequency distributions, index numbers, time series, probability, and probability distributions. Prerequisite: completion of Mathematics 125 or 231, or preferably, concurrent registrations in Mathematics 125 or 231, or consent of instructor.

212. ELEMENTARY STATISTICAL METHODS II (4). Sampling distributions, estimation, hypothesis testing, regression and correlation, sampling theory, non-parametric statistics, and analysis of variance. Prerequisite: Statistics 111; a non-business student with consent of instructor.

GENERAL COURSES IN QUANTITATIVE ANALYSIS AND CONTROL

160. INTRODUCTION TO DATA PROCESSING (3). An introductory course in data processing principles, including logical analysis, computer programming, the nature of the computer, and the nature of the computer environment in business. Prerequisite: completion of Mathematics 112 or 131 or consent of instructor.

ROMANCE LANGUAGES

Generally, one year of high school study of a language is equivalent to one quarter of college study. Credit toward graduation is not allowed for 101, 102, 103, 201, 202, when the equivalent credit has been accepted from high school as part of the admission credits except that a student is allowed to duplicate one unit of high school study with University credit.

FRENCH

101. ELEMENTARY FRENCH (4). Beginning oral-aural study of the language, with attention to grammar. Four class periods and scheduled oral practice each week.

102. ELEMENTARY FRENCH (4). French 101 continued. Four class periods and scheduled oral practice each week. Prerequisite: French 101 or one year of French in high school or equivalent.
03. ELEMENTARY FRENCH (4). French 102 continued. Four class periods and scheduled oral practice each week. Prerequisite: French 102, or one and one-half years of French in high school, or placement.

201. INTERMEDIATE FRENCH (4). Four class periods and laboratory. Prerequisite: French 103 or two years of French in high school or equivalent.

202. INTERMEDIATE FRENCH (4). French 201 continued. Four class periods and scheduled oral practice each week. Prerequisite: French 201 or three years of French in high school or equivalent.

SPANISH

101. ELEMENTARY SPANISH (4). Beginning oral-aural study of the language with attention to grammar. Four class periods and scheduled oral practice each week.

102. ELEMENTARY SPANISH (4). Spanish 101 continued. Four class periods and scheduled oral practice each week. Prerequisite: Spanish 101 or one year of Spanish in high school or equivalent.

103. ELEMENTARY SPANISH (4). Spanish 102 continued. Four class periods and scheduled oral practice each week. Prerequisite: Spanish 102, one and one-half years of Spanish in high school or placement.

201. INTERMEDIATE SPANISH (4). Four class periods and laboratory. Prerequisite: Spanish 103 or two years of Spanish in high school or equivalent.

202. INTERMEDIATE SPANISH (4). Spanish 201 continued. Four class periods and scheduled oral practice each week. Prerequisite: Spanish 201 or three years of Spanish in high school or equivalent.

SOCIOLOGY

101. PRINCIPLES OF SOCIOLOGY (4). Elements and concepts of social organization, social change, and group relationships.


231. CULTURAL ANTHROPOLOGY (4). Basic concepts and objectives in the study of culture. A survey of the range of cultural phenomena and approaches to their study. Prerequisite: Sociology 101.

SPEECH

102. PRINCIPLES OF SPEECH (4). Basic principles of oral communication and the field of speech, with attention to individual needs.

141. THE THEATRE EXPERIENCE (4). The art of the theatre; its heritage and contemporary values as a humanistic discipline; its importance as a cultural experience; an opportunity for some involvement in the theatre experience.

146. DRAMATIC PRODUCTION (1 or 2). A laboratory course for the student who participates in a theatre activity.

* 201. ARTS AND SCIENCES OF SPEECH (3). Designed to provide an understanding and insight into the field of speech as a whole. Attention is directed toward basic issues faced by each of the areas of speech and their interrelationships. Prerequisite: Speech 102.

202. ORAL INTERPRETATION (4). Logical and aesthetic meaning in prose, poetry, and drama for oral performance; selection of materials for programs; and vocal and physical techniques of performance.

203. SMALL GROUP COMMUNICATION (4). Study of social interaction in small groups with primary emphasis on problem solving processes.

** 204. ARGUMENTATION: INQUIRY AND ADVOCACY (4). Basic principles of argumentation with emphasis on analysis, evidence, reasoning and refutation.

** 205. ADVANCED PUBLIC SPEAKING (4). Principles of public speaking and speech composition in professional, business and educational settings, with attention to the use

* Offered upon demand
** Offered alternate years
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* 1972 - 73 Faculty
FIRELANDS CALENDAR

FALL QUARTER, 1973
September 26, Wednesday
November 21, Wednesday
November 26, Monday
December 10, Monday
December 12, Wednesday
December 15, Saturday

Classes begin 8:00 a.m.
Thanksgiving recess begins 8:00 a.m.
Classes resume 8:00 a.m.
Examinations begin 8:00 a.m.
Fall quarter ends
Commencement

WINTER QUARTER, 1973
January 3, Thursday
March 14, Thursday
March 16, Saturday
March 17, Sunday

Classes begin 8:00 a.m.
Examinations begin 8:00 a.m.
Winter quarter ends
Commencement

SPRING QUARTER, 1973
March 25, Monday
June 3, Monday
June 5, Wednesday
June 8, Saturday

Classes begin 8:00 a.m.
Examinations begin 8:00 a.m.
Spring quarter ends
Commencement