



Calvin College

The College of the Christian Reformed Church



Catalog for 1975-76

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1975

September

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Calendar

The Fall Semester 1975

SEPTEMBER	2	<i>Tuesday</i>
	3	<i>Wednesday</i>
	4-6	<i>Thursday-Saturday</i>
	8	<i>Monday</i>
OCTOBER	20-21	<i>Monday-Tuesday</i>
NOVEMBER	11-19	<i>Tuesday-Wednesday</i>
	26	<i>Wednesday</i>
DECEMBER	1	<i>Monday</i>
	12	<i>Friday</i>
	13	<i>Saturday</i>
	18	<i>Thursday</i>

Faculty-Board conference
Residence halls open
Orientation and registration

First semester classes begin 8 a.m.
Convocation 10 a.m.
Reading recess

Registration for Interim
and spring semester
Thanksgiving recess 5 p.m.
Classes resume 8 a.m.
Classes end 10 p.m.
Examinations begin 10:30 a.m.
Fall semester ends 5 p.m.
Christmas vacation begins

The Interim 1976

JANUARY	7	<i>Wednesday</i>
	29	<i>Thursday</i>

Interim term begins 8 a.m.
Interim term ends 5 p.m.

The Spring Semester 1976

FEBRUARY	2	<i>Monday</i>
MARCH	19	<i>Friday</i>
	30	<i>Tuesday</i>
MAY	13	<i>Thursday</i>
	14	<i>Friday</i>
	19	<i>Wednesday</i>
	22	<i>Saturday</i>

Second semester classes begin 8 a.m.
Spring vacation begins 5 p.m.
Spring vacation ends 8 a.m.
Classes end 5 p.m.
Examinations begin 2 p.m.
Last examination period 4:30 p.m.
Commencement 3 p.m.

The Summer Semester 1976

JUNE	24	<i>Monday</i>
	16	<i>Wednesday</i>
	17	<i>Thursday</i>
JULY	9	<i>Friday</i>
	12	<i>Monday</i>
AUGUST	3	<i>Tuesday</i>
	4	<i>Wednesday</i>
	26	<i>Thursday</i>

First session begins 8:30 a.m.
First session ends
Second session begins 8:30 a.m.
Second session ends
Third session begins 8:30 a.m.
Third session ends
Fourth session begins 8:30 a.m.
Fourth session ends

The Fall Semester 1976

SEPTEMBER	7	<i>Tuesday</i>
	8	<i>Wednesday</i>
	9	<i>Thursday</i>
	13	<i>Monday</i>

Faculty-Board conference
Residence halls open
Orientation and registration begins
Fall semester classes begin 8 a.m.



History

The history of the college and its objectives

CALVIN COLLEGE is a college of the Christian Reformed Church. The Christian Reformed Church is a century-old church with a five century-old heritage. It bases its whole faith and life on the sacred Scriptures, God's holy, inspired, infallible Word, and thus takes its stand with the churches which have their roots in the Protestant Reformation.

In America, the Christian Reformed Church traces its origin to a band of immigrants who sought freedom in the nineteenth century from the established church of the Netherlands. They settled in western Michigan and, after an early period of religious unrest among the thousands of Dutch settlers who soon joined the earlier immigrants, organized the Christian Reformed Church in 1857.

The Christian Reformed Church subscribes to three statements of faith (in addition to the early Christian Apostolic Creed), which stem from the Reformation period: the Heidelberg Catechism, which is the most famous and widely translated of all Reformation creeds; the Confession of Faith, written by the Belgian theologian Guido de Brès, in 1561; and the Canons of Dordt.

The Christian Reformed Church stresses the sovereignty of God in every part of life—in the family, the church, the state; in world affairs; in economic, social, and political life; in business; and in education and the arts.

The founding date of Calvin College and Seminary is 1876. In that year the Christian Reformed Church adopted a six-year curriculum for ministerial training. The first four of these years were spent in the Literary Department and the last two in the Theological Department. In 1894 students who were not pretheological students were admitted to an expanded curriculum, and thus the school became a type of preparatory school or academy. In 1900 the curriculum was further broadened and made more attractive to students interested in teaching or in preparing for preprofessional courses in the universities. By 1906 the Literary Depart-

ment, which provided the four years of preparatory and two years of college work, became known officially as the John Calvin Junior College. The two-year college in time became a four-year college, and the preparatory department was discontinued. In 1921 Calvin College awarded its first Bachelor of Arts degree.

The school which had started with seven students grew slowly during the early years, but by 1930 it had reached its pre-World War II size of 350-450 students. By 1950 the enrollment had climbed to 1,270 and last year was 3,400.

In 1956 when it became obvious that the college could expand no further on its Franklin Street campus, the trustees purchased the 165 acre Knollcrest Estate on the edge of the city. The new campus was planned as a unit before the first buildings, the seminary complex, were completed in 1960. Two years later the college constructed four residence halls and a dining hall, beginning what was to be the decade of the divided campus. In the same year the first section of the library combined with Heritage Hall and a classroom wing, Hiemenga Hall, were opened. Other buildings followed: the Physical Education Building in 1965, the Fine Arts Center and four more residence halls in 1966, a new student Commons in 1967, and a Science Building and two more residence halls in 1968. In 1970 the Library was expanded and two additional residence halls were opened to bring the total to twelve with a capacity of 1,500 students. The College Center, the most recent building, and the Natatorium complete the campus development, providing for the potential of 4,000 students and a reunited campus.

LIBRARY

The Calvin Library is at the center of the campus, serving students of both the college and the seminary. Its 240,000 volume collection of books and bound periodicals is distributed over three floors of open stacks, which are arranged according to the Library of Congress classification. More than 1,750 current periodicals are available for use in the Library. Two major microfiche collections, The Library of American Civilization and The Library of English Literature, are part of the 17,000 item collection of microfilm, microfiche, and microcards. The library, which is air conditioned, can seat 1,100 persons, mainly in individual study carrels but with tables, lounge seating, and seminar rooms as well.

Several special collections are housed in the library. The Curriculum Center contains a wide variety of demonstration teaching material useful to teachers and prospective teachers. The H. H. Meeter Calvinism Research Collection, located on the balcony of Heritage Hall, is one of the most extensive collections of books and articles on John Calvin and Cal-

vinism available anywhere. The lower level of Heritage Hall houses the Colonial Origins Collection, which consists of manuscripts, archives, and other records of the Christian Reformed Church, its leaders, its Dutch origins, and closely related institutions. The Calvin Library is a partial depository of government documents, holding approximately 28,000 items. The Cayvan Room with its many recordings and tapes is available for both the study and enjoyment of music.

AIM AND PURPOSE

Calvin College aims to give young people an education that is Christian and is governed by the Christian faith as reflected in the Reformed standards. The arts and sciences cultivate in the student value-judgments related to a thorough knowledge of facts about man's relationship to God, to himself, to his fellowman, and to the world. The college leads each student to offer all his talents — creative, imaginative, intellectual, and social — eagerly and earnestly in the service of God and of his fellowmen. Thereby they are taught to acknowledge the Lordship of Christ over all things. Thus, the college seeks to promote in the student sound scholarship, earnest effort, and a sense of obligation to use his talents fully, in response to a divine calling.

The faculty members subscribe to the credal position of the denomination and in their teaching and personal contacts strive to reflect the Lordship of Christ and the authority of the Word of God.

The college admits not only students from the Christian Reformed Church and other evangelical Protestants, but also others who, interested in the benefit of the Christian atmosphere and Reformed character of the academic programs of the college, show an interest in the aims of the college.

The end of Christian faith is Christian life. Informed and mature faith calls for a life of action and involvement. It seeks personal piety, personal integrity, and social responsibility. It recognizes that service to God and to fellowman is possible and necessary in all professions and all walks of life. It asserts that the life of Christian service must be lived now. Accordingly, at Calvin College many opportunities are provided for students to apply their learning to Christian action and service. Some of these are in the formal academic setting, some are voluntary in the broad urban community which surrounds the college, others include involvement in the churches of the area.

GOVERNMENT

The corporate name of the college is CALVIN COLLEGE AND SEMINARY. It is governed by a single board of trustees, which represents the ecclesiasti-

cal divisions of the church, arranged on geographical lines. Internally, the administration, the staff, the student body, and the physical facilities of the college and seminary are completely separate and independent. The membership of the board is constituted of ministers elected by the various classes and approved by synod, and laymen elected by synod. The board of trustees meets in February and May of each year. An executive committee, which meets on the second Thursday of each month, functions for the board throughout the academic year.

Calvin College, in accordance with Title 6 of the Civil Rights Act of 1964, operates in a non-discriminatory manner with regard to race, color, or national origin.

ACCREDITATION

Calvin College is fully accredited by the North Central Association of Colleges and Secondary Schools. It is also accredited by the American Chemical Society and by the National Council for Accreditation of Teacher Education. It is on the American Association of University Women list of institutions qualified for membership in the association. It maintains membership in the American Council on Education, the Association of American Colleges, American Association of Colleges for Teacher Education, College Entrance Examination Board, National Education Association, the Mathematical Association of America, and the American Mathematical Society.

CALENDAR, SUMMER SCHOOL

The academic calendar at Calvin College follows the traditional 4-1-4 plan, consisting of two semesters, each approximately four months in length, plus a one-month interim term in January. Typically, during each of the two semesters a student takes four courses, each of equal academic value, and during the interim he takes one. A reading recess during the first semester and the spring vacation during the second provide an opportunity for students to do research and to complete major projects. As part of the 4-1-4 program an honors program has been established for the superior student as well as a special program of assistance for students admitted on probation.

The summer school consists of four consecutive three and a half week sessions with a student permitted to register for one regular course during each session. A student who attends all four sessions may complete a full semester's program.

THE CALVIN ALUMNI ASSOCIATION

The Calvin Alumni Association is composed of all persons who have attended Calvin College for at least one year or who have completed eight courses. Persons who have attended the Calvin Seminary for one year and those who teach at the college or seminary are also considered members of the association.

The purpose of this association is to provide an avenue for the exchange of ideas between the alumni and Calvin, to undertake projects which advance the college and seminary, to unite all alumni in support of their alma mater, and to be of service to the 23,000 alumni through a variety of contacts.

The Calvin Alumni Association is governed by a board of fifteen members who serve for three years upon election by ballot from all alumni. The board meets four times during the year and the annual business meeting is held during the last week in May. Board meetings are open to any alumnus and alumni chapters are urged to send representatives to the May meeting.

The work of the association is supervised by a full-time Director of Alumni Relations. The alumni-financed program of upperclassmen scholarships and freshmen grants are of special interest to students. Information concerning these may be obtained from the Alumni Office.

BROENE COUNSELING CENTER

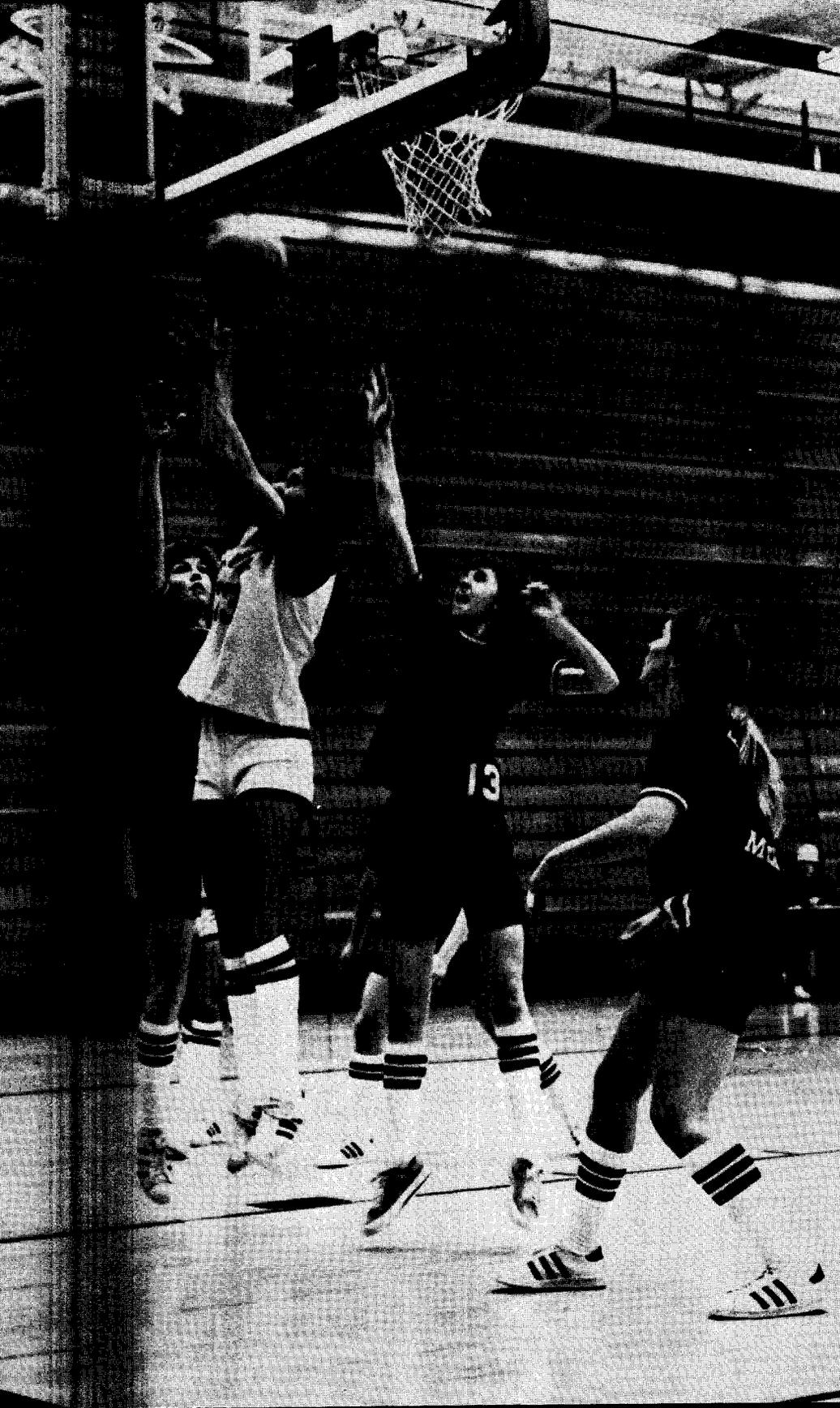
The Broene Counseling Center, a part of the Division of Student Affairs, provides a variety of services for the students. It offers vocational testing and counseling, tutorial assistance, training for the residence hall staff, as well as individual and group counseling.

The Center staff works with students who have vocational, learning, social, and milder emotional concerns; but does not aim at long-range treatment for those with severe emotional disturbances.

The staff of the Center is composed of full-time counselors. Outside consultants and agencies are also utilized occasionally by the Center.

TEACHING-LEARNING MATERIALS CENTER

The college maintains a Teaching-Learning Materials Center, which serves the instructional program of the entire college. It includes the audio-visual services, the audio-visual laboratory, the curriculum center, a graphics production center, and television demonstration classrooms.



Student life

The student life on campus and its regulation

THE AIM OF CALVIN COLLEGE is to prepare students to live productive lives of faith to the glory of God in contemporary society—not merely lives that have a place for religion, or lives which formally relate religious commitment to the academic disciplines, but lives which in every part, in every manifestation, in their very essence, are Christian. Accordingly, the college attempts through its rules, its organizations, and the counsel of its personnel, to show the student how a life of commitment is lived in his room, on the athletic field, in his academic work, and in his daily religious practices. This matter of being totally Christian cannot be deferred until graduation. Confrontation with the secular world, cooperation with Christians in common cause, and the development of personal expressions of faith must be part of current college life. This being in the world while not of it, this testing of the spirits, whether they be of God or not, this searching, seeking, learning, trying—this is the business of Christian education at Calvin.

WORSHIP AND CHRISTIAN SERVICE

All students are expected to worship regularly at a church of their choice. Sunday worship services are held on the Knollcrest campus under the auspices of four local consistories. Students are encouraged to avail themselves of the counseling services of the local pastors or of the college chaplain.

Chapel services are held at 10 o'clock Tuesday through Friday morning. The main chapel is held in the Fine Arts Auditorium but a variety of other services such as morning prayers, foreign language chapels, and group devotions are held at other places at this time. Students are expected to attend some chapel services during the week. In addition there are many opportunities for voluntary religious activities. Bible study groups, student prayer groups, Christian service activities, and evangelistic outreach are a few of these voluntary programs. This part of campus religious life is supervised by the Student Affairs Division, various committees, and the college chaplain. The latter is available for counsel at any time.

MAINTENANCE OF COLLEGE STANDARDS

Admission to Calvin College is a privilege that may be withdrawn from any student who does not meet the academic standards of the college. In addition, the college not only expects a student to conduct himself both on and off campus in accord with his statement of religious commitment as he has indicated it in the application forms, but the college may refuse admission to, may discipline, or may expel any student who in its judgment displays conduct or attitudes unworthy of the standards of the college. The *Student Handbook* and *Residence Hall Living* describe the regulations and their implementation.

HOUSING

Freshman and sophomore students under 21 years of age not living at home with their parents are required to stay in the Calvin College Residence Hall. Juniors and seniors (students who have successfully completed sixteen or more courses) and students 21 or older as of October 1 of the fall semester may choose their own type of housing and are permitted to reside off campus.

The college requires all students to register their place of residence with the Housing Office and to notify that office of all changes in residence during the period of their enrollment. Upperclass women students may also arrange to work for their room and board. Information on available housing costs and further interpretation of these rules is available from the college Housing Office.

THE FINE ARTS

Many sorts of fine arts activities thrive at Calvin both as part of the academic life and as the result of spontaneous student interest. Bands, orchestras, choral groups, and chamber ensembles are part of the program of the Department of Music for the participation of all qualified students. The dramatic productions of the Thespians as well as intercollegiate debating and other forensic activities are sponsored by the Department of Speech. Students from all departments participate. The long Calvin tradition of creative writing for publication and for private reading is encouraged by the members of the Department of English. *Dialogue* and *Chimes* provide opportunities for student publication. The Department of Art creates excitement in the various graphic and plastic arts. Student creative work in all fields is stimulated by the Fine Arts Guilds which present an annual Fine Arts Festival in the spring.

For students less interested in participation than in appreciation the student senate provides a program of speakers, of fine films, and of other

entertainment. Other public performances sponsored by various academic departments, by the alumni association, and by community groups are presented on campus.

ATHLETICS

The program of required physical education is organized to promote physical fitness, to introduce students to a variety of sports programs, and to create sufficient skill and interest so that they will continue to participate voluntarily. Accordingly, facilities for both indoor and outdoor recreational facilities are conveniently and freely available. The intramural program is extensive throughout the entire year, with competition organized around sports clubs which may be based on residence units or class groups. Calvin participates in most inter-collegiate sports except football and is a member of the Michigan Intercollegiate Athletic Association (MIAA) composed of Albion, Alma, Adrian, Calvin, Hope, Kalamazoo, and Olivet colleges. It is also a member of the State of Michigan Association for Inter-collegiate Athletics for Women (SMAIAW) of twenty schools.

STUDENT SENATE AND OTHER ORGANIZATIONS

Elected from the four classes, the thirty-three member student senate has an important role in the life of the college. Not only does it serve as the official voice of the student body, but it supervises most student activities. It oversees the budgets of student organizations and concerns itself with student publications, homecoming, the film arts, the Fine Arts Guilds, and similar groups. Student members serve on most faculty committees.

All residence halls have their own governing councils and judiciary committees. These units work in cooperation with the staff members to enhance community life in the halls.

Numerous clubs and societies exist on campus, many of which are related to particular academic departments, such as education, psychology, and sociology. There are also many volunteer service groups which attract student participation, such as KIDS (Kindling Intellectual Desire in Students), an organization of Calvin students that supplies teachers' assistants, "big brothers" and "big sisters" for the local courts, and tutors for high school students with disadvantaged backgrounds. All organized clubs or similar groups must have formal approval and sponsorship.

HEALTH SERVICES

The college provides limited medical services for all students. This is maintained by a fee incorporated in the tuition charge. The health center, located in the basement of Heyns Hall, is maintained by a full-time nurse

and a college physician who holds office hours each morning. This service is limited to out-patient treatment. All serious medical problems will be referred to the student's family physician, in the case of local students, or to a physician of the student's choice.

A Group Accident and Sickness Expense Protection Plan is available to all students on a low-cost, voluntary basis and all students not covered by similar plans are strongly urged to participate. Married student family plans are also available. Information is available in the Business Office.

The Calvin College Blood Donor Club, sponsored by KIDS and chartered by the Michigan Community Blood Center, covers all blood needs of students, faculty, and staff. Campus blood drives provide a blood credit which is administered through the college health center. Blood not needed is made available to the needy of the community.

The college is not liable for injuries sustained by students in their activity as students, even though such injuries occur on college premises, in laboratory work, or in physical education classes. The college does not undertake to be the insurer of its students and its liability under the law must be based on fault. It is necessary, in order to establish the liability of the college for such injuries, not only to prove negligence or carelessness on the part of the college, but also to show that the student was free from any negligence or carelessness which might have contributed to the injuries. Accordingly, students are advised to be certain that they are covered by personal health and accident insurance.

COUNSELING AND ADVISING

During the summer preceding the arrival of the new student on campus, each freshman is assigned to a faculty member or to a member of the college staff. This faculty or staff member will keep in regular contact with him during his freshman year, reviewing his grades and progress, to assure a satisfactory transition from high school to college.

A student after his freshman year is expected to relate himself to some department or to some professor who will assist him in developing an appropriate academic program and in other matters. By the end of the sophomore year each student must work out a counseling form defining a program which will lead to graduation. This usually requires declaring a major in a given department or group of departments. The chairman or some other member of the department at this time becomes the student's adviser. Such majors and advisers may be changed whenever a student changes his academic interests.

Additional general and specialized services are provided for all students. The college chaplain, the deans of men and women, and the dean

of student life are available to students. The Broene Counseling Center provides professional help for specialized problems, including personality and vocational testing and counseling. The college also has working relationships with outside consultants and agencies.

All new students are required to participate in a program of orientation held just prior to registration. At that time they will meet a number of faculty members as well as administrators, including the college president, the vice-presidents, and deans. Information about college activities and facilities, and the distribution of registration materials are a part of the orientation program. Upperclassmen serve as orientation leaders for small groups of new students. The orientation information is mailed to new students during the month before registration.

USE OF AUTOMOBILES

Automobiles owned or operated by Calvin students must be properly registered in the Security Office and must carry an official college automobile permit. Automobiles may be parked only in approved student parking areas and the drivers will be fined if they are parked elsewhere. Because parking areas are limited, parking regulations are enforced stringently.

STUDENT RIGHTS AND STUDENT RECORDS

The Family Educational Rights and Privacy Act of 1974 declares that "institutions must provide . . . student access to official records directly related to students and an opportunity for a hearing to challenge such records on the grounds that they are inaccurate, misleading, or otherwise inappropriate; that institutions must obtain the written consent . . . before releasing personally identifiable data about students from records to other than specified lists of exceptions; that . . . students must be notified of these rights. . . ."

Calvin College assures the safekeeping and confidentiality of student records and files. It also recognizes the rights of students and the responsibilities incumbent on the college because of this legislation. The guidelines for the implementation of this legislation, intended to preserve confidentiality and to assure student access to their records, are available in the Office of the Registrar.

GRADUATE PLACEMENT AND FELLOWSHIPS

The college maintains a series of services for graduating students to assist them in securing fellowships to graduate school, teaching positions, and career placement.

The Teacher Placement Bureau, administered through the Department of Education, assists graduates in securing teaching positions. All seniors and graduates of the college who have completed the requirements for teacher certification are eligible for this service without charge but must file all the appropriate data with the bureau to secure the service. Such information is made available to any interested school.

The Student Affairs Office maintains a directory of prospective employers seeking college graduates and makes known through the *Intra-Campus Bulletin* the times when such organizations will interview students. Seniors may place their employment credentials in the office. If authorized by the student, these will be made available to recruiters and prospective employers when they visit the campus or by mail.

Various graduate school and graduate fellowship programs are supervised by the coordinator of graduate fellowships. The broadest of these is the Michigan Scholars program which attempts to identify and encourage students of promise who are interested in graduate education. This program is administered cooperatively by five Michigan liberal arts colleges and the University of Michigan. Students who show outstanding promise are eligible for graduate fellowships. A number of competitive national fellowships are available to Calvin seniors and information on these is also available through the coordinator. These include the Danforth Foundation fellowships, the Rhodes scholarships, the Marshall fellowships, the National Science Foundation fellowships, the various Fulbright grants, and many others. The conditions for these grants vary from year to year as do the deadlines. For most of them, however, application must be made early in the fall and students are advised to take the Graduation Record Examination at the earliest possible date.

Admission

Regulations concerning admission, grading, etc.

IN SELECTING STUDENTS for admission, Calvin College naturally looks for evidence of Christian concern and for the capacity and desire to learn. Students who are interested in the Christian atmosphere and curriculum at Calvin and show an interest in its aims are eligible for admission. Although the prospect of academic success is of primary consideration, the applicant's aspirations, the recommendations of his pastor and school, and the particular ability of Calvin to be of service to him will be considered.

Any prospective student requesting application material will be sent forms necessary to apply for admission and for financial aid. He will be notified concerning his admission as soon as the office of admission has received his application form, his high school and college transcripts, and his pastor's recommendation. All application forms received later than May 1 must be accompanied by a \$10 late registration fee. In addition to these documents a prospective freshman student must submit the results of a college entrance examination, typically the American College Test or the Scholastic Aptitude Test. Candidates applying for scholarships should take their examination not later than December.

The following documents must support each application:

1. **SCHOLASTIC RECORD** The applicant's previous education must be reflected in a transcript from an accredited secondary school which shows the satisfactory completion of fifteen units of work and the school's appraisal of the candidate. (A unit is the equivalent of five class hours a week for thirty-six weeks in one branch of study.) These fifteen units should include three units of English as well as a three-unit major sequence and two two-unit minor sequences chosen from a single foreign language, the mathematics-physics area, the natural sciences (excluding general science), and the social science area. The remaining units may be selected from those which count toward graduation in an accredited high school, but the Office of Admissions has the ultimate right of rejection. Candidates intending to follow the pre-seminary program are advised to complete a minimum of two units of Latin. Those intending to major in engi-

neering, mathematics, or physics should complete four units of mathematics, if possible.

2. REPORT OF COLLEGE ENTRANCE EXAMINATIONS An entrance examination is required of all entering freshman students. This may be either the American College Test (ACT), the Scholastic Aptitude Test (SAT), or, for Canadians, the Service for Admission to Canadian Universities Test (SACU). Application for these tests must be made approximately a month prior to the testing date and candidates should sit for such examinations at the earliest convenient date.

The American College Test is given, normally, five times a year throughout the world. Application forms are generally available from high school principals and counselors but may be requested from the American College Testing Program, Box 168, Iowa City, Iowa 52240. This test is required by the State of Michigan for its competitive scholarship program. Testing dates for the next academic year are October 18, December 13, February 14, April 10, and June 12.

The Scholastic Aptitude Test will be given this academic year on November 1, December 6, January 24, April 3, and June 5. Application forms are generally available from high school principals and counselors but may be secured by students living east of the Rocky Mountains from the College Entrance Examination Board, Box 592, Princeton, New Jersey 08540. Those who live in the Rocky Mountain states or farther west, including those from Western Canada and foreign countries of the Pacific areas, should apply to the College Entrance Examination Board, Box 1025, Berkeley, California 94701.

3. APPLICATION FOR ADMISSION

4. PASTOR'S RECOMMENDATION

READMISSION

Former students of the college and applicants who previously had been given papers entitling them to admission but who did not register must make formal application for readmission.

TRANSFER STUDENTS, ADVANCED STANDING

Students transferring from other college or universities must follow the same procedures of applying for admission as freshmen, but they are not required to sit for entrance examinations and should have a cumulative grade point average of C (2.0) or higher. They will receive credit for work done in accredited institutions provided the courses were of an academic nature and they received an honorable dismissal. However, not more than sixteen credit hours for each semester in attendance will be accepted. No more than seventy semester hours of advanced credit will be

allowed for work completed at an accredited junior college. Furthermore, no matter how much work done at other institutions may be accepted, a student must complete his last year in residence to graduate from Calvin.

A maximum of three course credits or nine semester hours will be allowed for courses taken by correspondence from accredited colleges and universities. Courses taken in residence at other accredited institutions are accepted, provided they have been approved by the registrar in advance. In no case, however, will work in a junior college be accepted after a student has accumulated more than twenty course units of credit at Calvin.

Veterans will receive credit, as recommended by the American Council on Education, for liberal arts courses taken through the USAFI and for a maximum of nine semester hours taken by correspondence courses from accredited universities in the program.

Entering freshman students may reduce the time required for a degree by giving evidence of knowledge in any course. Candidates for such advanced college credit must apply formally and may demonstrate their ability in any of four ways: they may have completed college-level work while in high school; they may submit a grade of 3 or higher on an Advanced Placement Examination of the College Entrance Examination Board; they may submit satisfactory scores on any of the Subject Examinations of the College-Level Examination Program administered by the College Entrance Examination Board; or they may pass special departmental examinations at Calvin College.

Completion of certain high school courses will excuse a student from specific college graduation requirements. Most high schools offer such courses in literature, foreign language, mathematics, and the various sciences. Students are encouraged to take such courses and in this way, as well as in others, to enter college with the strongest possible academic

MODEL HIGH SCHOOL PROGRAM

High school students should recognize that the quality of their high school education will determine the ease with which they will do college work and their ability to follow certain courses of study. At Calvin, the nature and quality of a student's high school preparation may reduce his college graduation requirements (See pages 41-45). Although in general narrow specialization is not desirable in high school, at least two years of Latin are recommended for those intending to become ministers and four years of mathematics for those with a professional interest in engineering, mathematics, or the sciences.

English	4 units	
Mathematics	3 units	An additional unit is desirable for prospective mathematics, physics, or engineering majors.
Foreign language	2 units	Preferably three; ideally the last unit in grade 12; prospective ministers should complete two or more units of Latin.
Science	2 units	Biology, chemistry, or physics; one with a laboratory.
History	2 units	
Typing		
Electives	3 units	

16 units Additional units are desirable for students with special interests.



preparation. Consult pages 43 and 44 for a description how high school courses satisfy specific college requirements.

ADMISSION UNDER SPECIAL CONDITIONS

The college is eager to serve any prospective student, including those with irregular academic histories, who show promise of benefitting from a college education. Applicants who are at least twenty-one years of age but have not completed high school or its equivalent may be admitted on probation provided they have successfully completed the General Educational Development Test and submit satisfactory scores on one of the freshman entrance examinations.

Applicants who have not met the requirements as to prescribed high school work or as to the distribution of that work may be admitted provisionally. The deficiency, however, must be removed before the end of the first year of residence. Applicants are strongly urged to make up any deficiency during the summer preceding their enrollment as freshmen. In many cases these deficiencies may be removed by attending the summer session at Calvin College.

Some applicants with weak high school records may be admitted on academic probation because of other evidence of academic promise. Such students will receive special counsel, may enroll for no more than 3.5 courses, and are advised to restrict sharply their involvement in employment, in social life, and in campus activities. Applicants who meet all of the requirements for admission but who do not desire to become candidates for an academic degree may be enrolled as special students for such studies as their preparation qualifies them.

The Calvin College Summer Developmental Program aims to assist students with all sorts of backgrounds who have not yet met the academic admission requirements of the college. In 1975 the program meets during the four weeks of August. Through intensive testing, counseling, and personal teaching, students who have established marginal high school records are given the opportunity to develop themselves in areas in which they are deficient. Particular emphasis is made on developing basic English and basic mathematical skills. Those students who demonstrate ability to do college-level work are admitted to Calvin College.

ADMISSION OF FOREIGN STUDENTS

Calvin College welcomes foreign students who can demonstrate their potential ability to meet the academic standards of the college, who are prepared to do college-level work in English, whose application is supported by the results of the American College Test (ACT) or the Scholastic Aptitude Test (SAT), and who can show evidence of their ability to pay

most of the cost of their education. The ACT and SAT are given in foreign countries but are not required of students presenting a Senior Matriculation Certificate or who transfer from another college or university where they have earned at least one semester of credit. Such students should be certain that Calvin College offers the program they need. The college is approved by the United States Immigration and Naturalization Service as an institution of higher education for the training of non-citizens who are in the United States on student visas.

When such an applicant is accepted for admission he will be sent a formal letter of admission by the director of admissions and a copy of the required I-20 form. The prospective student should make application immediately with the United States Consul in his area for a student visa.

Applicants from non-English speaking countries must demonstrate an adequate command of the English language. This can be done by passing either the English Test administered by the English Language Institute of the University of Michigan, Ann Arbor, or the Test of English as a Foreign Language administered periodically throughout the world by the Educational Testing Service of Princeton, New Jersey.

ADMISSION TO THE NURSING PROGRAM

Candidates for the joint nursing program of Calvin College and the School of Nursing at the Blodgett Memorial Hospital must apply for admission to the college as outlined above and must also apply to the Director of the School of Nursing, Blodgett Memorial Hospital, Grand Rapids, Michigan 49506. Those students who are interested should apply during their junior year in high school or not later than the beginning of their senior year. The candidate must be accepted by both the college and by the admissions committee of the School of Nursing. Students interested in nursing should also consider the various bachelor of science in nursing programs listed on page 61.

ENROLLMENT IN SEMINARY CLASSES

Full-time college students may, as part of a program worked out with their departmental advisers, carry up to two courses in the seminary in any one semester. Approval by the registrar of the seminary and the registrar of the college is required, and under no circumstances may credit for a single course be counted toward degree programs in both college and seminary. Full-time seminary students may enroll for not more than two courses in the college, provided the dean of the seminary and the college registrar approve.

STUDENT LOAD AND CLASSIFICATION

The typical student load is four courses a semester. The normal load, however, may range from three to four and a half courses with courses in applied music, drama, and speech and in required physical education not included in the maximum. A semester's participation in applied arts courses carries one-quarter course credit, but not more than two course credits thus acquired may be applied toward graduation, except for music majors in certain applied music concentrations. Not more than four semesters of basic physical education courses may be applied toward graduation. In exceptional cases a student may apply to carry more than four and a half courses; such an application requires the recommendation of his academic adviser or department chairman and the approval of the dean of the college.

Students with a minimum of seven courses completed will be classified as sophomores; those with sixteen, as juniors; and those with twenty-five, as seniors. For the purposes of conversion, a course is considered to be equivalent to 3.5 semester hours or 5.25 quarter hours.

GRADING SYSTEMS

Grades given during the regular semester are designated by letters A, excellent; B, good; C, average; D, just passing; and F, failure. Courses completed with grades of D or F may be repeated once with only the second grade included in the compilation of the student's cumulative grade point average. When a student in the honors program takes a fifth course it is graded on the basis of satisfactory or unsatisfactory. Grade reports will be issued to the parents or guardians of a student unless the student files a written request to the contrary at the Registrar's Office.

For purposes of averaging grades, the following numerical values or grade points are assigned to each of the above grades: A, four points per course; B, three; C, two; and D, one. A plus grade is computed at three-tenths of a point above these figures and a minus grade at three-tenths below. Grades for courses completed at other colleges and universities are recorded on the student's record but are not included in the compilation of his average at Calvin.

Ordinary grades for the interim are H, honors; S, satisfactory; and U, unsatisfactory. These do not carry honor point values and are not averaged in the student's total record, but the student receives one course unit credit toward the thirty-six required for graduation for each interim course satisfactorily completed. If courses normally offered during either semester are taught during the interim, they will be graded according to the traditional letter system and will be included in the student's average.

If because of prolonged illness or similar extenuating circumstances a student is unable to complete the work required, he may be given an I indicating that the course requirements have not been completed, or an X, indicating that he was unable to sit for the final examination. Under other circumstances students not completing the required work or willfully absenting themselves from examinations will be given an F for the work not completed. The provisional grades of I and X are computed as F when determining the student's grade point average and automatically become F or U if not removed within a calendar year. The responsibility for removing such grades rests completely with the student, who must communicate with the professor concerned.

A grade of W, withdrawn, will be recorded if a student leaves a course for any reason with the official approval of his instructor and the registrar before November 15 of the first semester or April 15 of the second. Only under unusual circumstances such as poor health or death in the family may students withdraw officially from courses after these dates. Under these circumstances, grades of WP, withdrawn passing, or WF, withdrawn failing, will be recorded. Students merely doing unsatisfactory work or not attending classes are not eligible for these grades. If a student officially withdraws from school with the approval of the dean of men or the dean of women and of the registrar, he will be given a grade of W in all courses and his parents will be notified.

Any student found guilty of dishonesty in any examination or test or in written work of any character will be given F for the course and will be subject to disciplinary action.

HONORS, PROBATION, ELIGIBILITY

Full-time students with an average grade of A- (3.50) or higher for any semester and a cumulative average of 3.1 or higher will be placed on the Dean's List. Students with cumulative averages below C (2.0) are placed on probation. Part-time students and those on academic or disciplinary probation may not participate in any organized extra-curricular activity. For details of these regulations, see the *Student Handbook*.

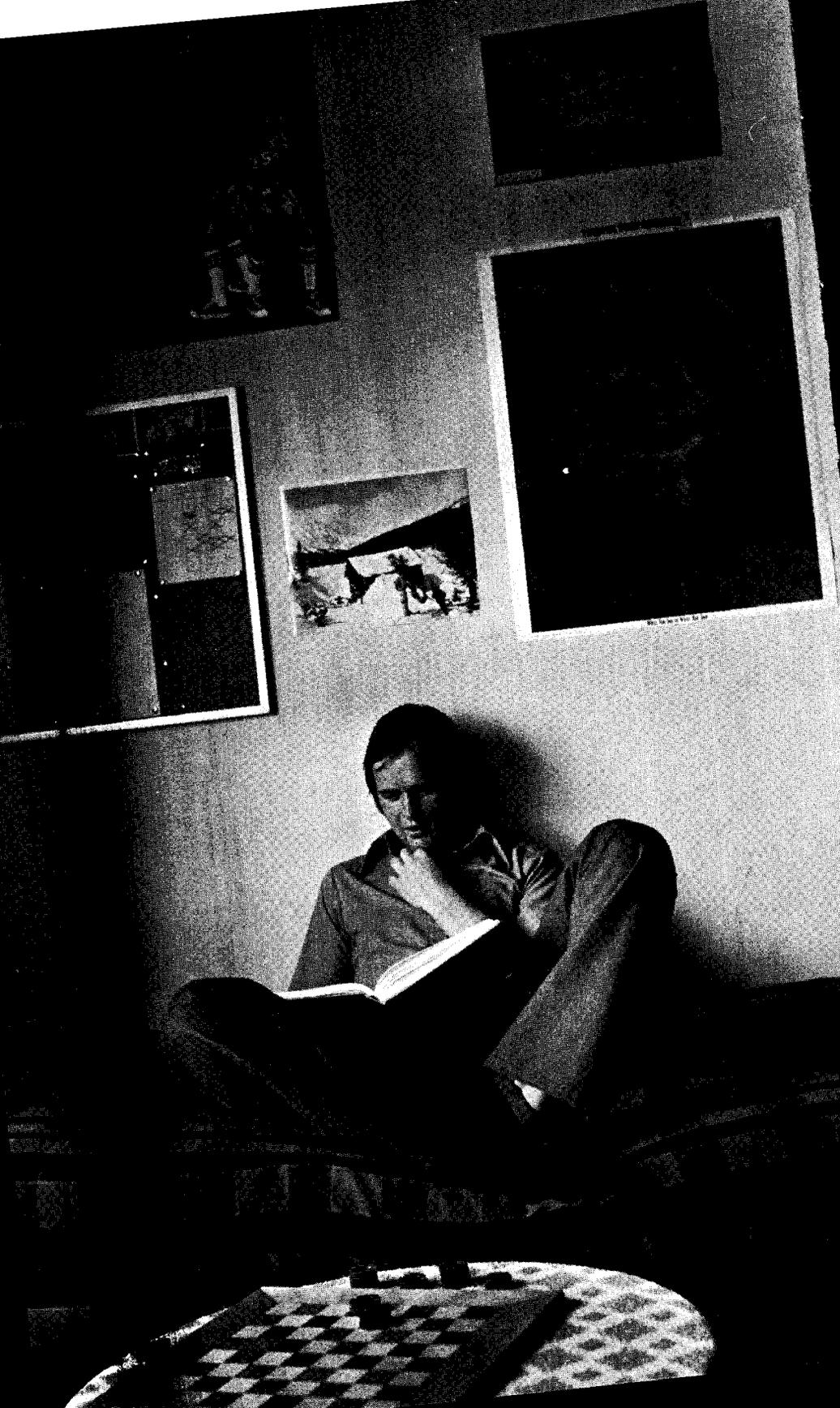
Students desiring to graduate with an honor designation must participate in the honors programs. Consult page 46 for details.

APPLICATION FOR DEGREES AND CERTIFICATES

In addition to the formal academic requirements for degrees described in the section on "The Academic Programs" beginning on page 41, every student must satisfy certain technical requirements. Normally, he must have completed his last year in residence at Calvin. He must have com-

pleted with his departmental adviser a Major Concentration Counseling Sheet and have met all the conditions specified in it (these sheets are normally completed during the sophomore or junior years), and must have filed a formal application for a degree in the Office of the Registrar not later than the beginning of the semester in which he expects to graduate.

Students who meet the conditions for teacher certification in Michigan, as explained on pages 47-53, should apply for this certificate at the Department of Education at the end of the semester during which they have completed the requirements. They must apply within one calendar year after the completion of these requirements.



Expenses

Expenses, scholarships, and other financial aid

TUITION AND RELATED FEES

TUITION AND related fees are \$1,960 for the year and \$980 for a semester. This includes fees for student organizations such as *Prism* and *Chimes*. The interim is considered an extra course which a student may take without an additional charge if he pays full tuition for either semester; if he does not, he will be charged at the one-course rate.

Calvin College is vitally interested in providing financial assistance for outstanding young men and women whose financial resources are inadequate to meet the basic cost of education. A significant amount of student financial support comes from the Christian Reformed Church in the form of institutional grants-in-aid. Students whose parents are members of the Christian Reformed Church, and who thus contribute regularly to the support of Calvin College, may apply for these institutional grants-in-aid at the time of registration. The amount of this grant-in-aid is determined in part by the distance between the student's home and Calvin College, as measured in a direct line. The home of an unmarried student is considered to be that of his parents; that of a married student to be that of his residence before enrolling at Calvin. If a student's parents are not members of the Christian Reformed Church, the grant-in-aid will be based on the location of the Christian Reformed Church of which the student is a member. The grant-in-aid for students whose need has been met by a State of Michigan Scholarship or Tuition Grant is adjusted to meet the regulations governing these programs. The combined institutional grant-in-aid and scholarship assistance for such students is limited to \$200. The institutional grant-in-aid for Michigan students whose need is not met by a State of Michigan Scholarship or Tuition Grant is:

	per semester	per year
Within 10 miles of the campus	\$100	\$200
From 10 to 150 miles	140	280
More than 150 miles	170	340

The institutional grant-in-aid for out-of-state students is:

From 0 to 300 miles	170	340
From 300 to 1,000 miles	210	420
More than 1,000 miles	250	500
Manitoba, Ontario, Quebec provinces of Canada	210	420
Alberta, British Columbia, and Saskatchewan provinces	250	500

In addition, a special institutional grant-in-aid of \$25 per student is given when two or more students paying full tuition enroll from one family.

The tuition rates for part-time students is \$250 for each course, with a \$25 institutional grant-in-aid for those who are members of the Christian Reformed Church. The auditing fee for part-time students is one-half of the regular tuition charge; there is no fee for auditing by full-time students.

TUITION, FEES

Tuition, per sem.*	\$980.00	Late payment fee	\$ 5.00
Tuition, part-time, per course*	250.00	Physical education deposit	5.00
Auditing, per course	125.00	Vehicle registration fee	1.00
Room and board, per year	1030.00	Transcripts	1.00
Teaching internship fee, per sem.	10.00	Exemption examination fee	5.00
Individual music instruction, per sem.	75.00	Course credit by examination fee	20.00
Residence hall social fee	16.00		
Late application fee	10.00	*See information above concerning grants-in-aid for members of the Chris- tian Reformed Church.	
Late registration fee	10.00		

In addition to these direct charges, the student should allow about \$120 per year for the purchase of textbooks and classroom supplies. An annual budget for personal items such as clothing, transportation, entertainment, toilet articles, and miscellaneous supplies varies widely among students.

PAYMENT OF FINANCIAL OBLIGATIONS

Students are encouraged to pay their tuition, fees, room and board in full at the time of registration each semester. For those students who need to make payments over a period of time, payment schedules are available at registration. These schedules will call for a down payment at the beginning of each term and payments of approximately one-third of the balance at the beginning of each subsequent month.

The minimum down payment required at registration for resident students is \$475 for tuition, room, and board; and the minimum down payment for non-resident students is \$300 for tuition.

Accounts that are not paid on time will be subject to a \$5 late payment fee. A fee of 1 percent per month is charged on all balances unpaid at the end of the term. If a student discontinues, the charge for tuition and for room and board will be prorated in proportion to the time the student has been officially in attendance.

Transcripts will not be issued for students owing money to the college.

STUDENT FINANCIAL AIDS

In addition to scholarships, which are granted on the basis of outstanding records and promise, Calvin College has a broad program of financial assistance for its students. This includes, in addition to the institutional grant-in-aid program described on page 27, a variety of other grant-in-aid and loan programs, several of which are supported or underwritten by the state and federal governments or by private organizations, and a placement service for part-time employment. The office also serves as a clearing house for non-college programs. The college urges each applicant to explore local or state sources of financial assistance as well. Generally, a student's financial needs can be met by a combination of the various programs. Students who may be eligible for scholarships should consult the section below.

A prospective student should not deny himself a Calvin College education because of cost without first exploring the possibilities of financial aid. However, financial arrangements should be made prior to registration. At that time the student should have in hand a substantial portion of the semester's expenses from savings, scholarships, loans, or grants-in-aid, and, if intending to carry a full academic load, should not plan to carry more than twelve to fifteen hours of employment.

Any student with financial need who feels he is eligible for any student aid program may request additional information from the Office of Scholarships and Financial Aid or request an application form. The office is located in the College Center. As a matter of policy, to be fair to all students, applications for financial assistance must be supported by a Parents' Confidential Statement, which is reviewed for the college by the College Scholarship Service of the College Entrance Examination Board to determine the degree of need. Students who apply should be in good standing or, if freshmen, should be admitted to the college. Freshmen applications should be received by February 1 and upperclass applications by March 1 to receive maximum consideration. Applications for financial aid are enclosed with all admission forms.

Basic Educational Opportunity Grant. This grant program, funded by the federal government, is designed to provide grant assistance of up to \$1,400 per year to students whose parents' ability to contribute is very limited. The amount of the grant is reduced proportionately if there are not sufficient funds to aid all eligible students. In 1975-76 this program will be open to students who entered college after April 1, 1973, and the maximum grant is expected to be

\$1400. Applications for this grant must be made separately.

Supplemental Educational Opportunity Grant. This program, funded by the federal government, is for students of exceptional financial need. The maximum award a student can receive is \$4,000 in four years or, in special circumstances, \$5,000 in five years. This program is open to students at all undergraduate class levels.

Calvin College Grants. The college has established a program of grant assistance for students with good scholastic records who also have financial need. Prospective freshmen with a high school average of B or better and upperclassmen with a cumulative grade point average of B or better will be considered for this grant if they have not been selected to receive a scholarship. Students with an academic record slightly below a B will also be considered for this grant program based on a review of other factors such as most recent grades, letters of recommendation, and, for prospective freshmen, admission test scores. The amount of this grant can be up to 40 percent of the student's financial need, with the remaining need being met with other grants, loans, and employment.

Calvin College Grants-In-Aid. Students with financial need who are not selected to receive a scholarship or grant from the college will be considered for a grant-in-aid. The amount of this grant can be up to 25 percent of the student's need, with \$700 being the maximum award.

SCORR Grants. The Christian Reformed Church has authorized the Synodical Committee on Race Relations (SCORR) to provide grants of up to \$1,000 per year to students of minority races who are within the fellowship of the Christian Reformed Church. The student may receive this award for four years if he continues to demonstrate financial need.

Minority Grants. The Student Senate of Calvin College has provided a limited amount of money to be used to assist student of minority races. A qualified student may receive up to \$500 in this program.

College Work-Study Program. Students who need employment to help pay for college expenses are eligible for employment by Calvin College or in approved off-campus agencies under this federally-supported program for U.S. citizens. The student's eligibility depends on his need, with preference being given to applicants with greatest need.

National Direct Student Loan Program. This program, sponsored by the federal government for U.S. citizens, provides long term loans to students with financial need. There is no interest charge on this loan while the student is attending college, and repayments can be deferred as long as the student continues to be enrolled at least half-time, or serves in the armed forces, in VISTA, or in the Peace Corps. After the borrower completes his service with one of the above mentioned organizations, or nine months after he ceases to be at least a half-time student, a ten-year repayment schedule commences with a 3 per cent interest charge. If the borrower becomes a full-time teacher of handicapped children or teaches in a school "with a high concentration of low income families" part of the loan be cancelled. If the borrower serves in the armed forces in an "area of hostilities" up to 50 percent of the loan may be cancelled.

Loans for Canadian Students. The various provincial governments of Canada have generous loan programs which may be used by students from those provinces.

Guaranteed Loan Programs. Loans from private banks, guaranteed and subsidized by the federal government through various state and private agencies, are available from many banks and other lending institutions in amounts up to \$2500. The loan can be interest-free if the adjusted gross income of the family is less than \$15,000 or if recommended by the college on the basis of financial need.

Albert Postman Loan Program. This program provides loans up to \$500 per year to members of the Christian Reformed Church who plan to enter full-time Christian service in the church or in its related agencies. Preference is given to students from western Canada.

Emergency Loans. Short-term loans of up to \$50 are available from funds provided by the *Royce Ulferts Memorial Loan Fund*, the *Eben Mumford Scholarship/Loan Program*, and the Kiwanis Club.

SCHOLARSHIPS

A number of scholarships are available for undergraduates of all classes, and each applicant should determine his own eligibility. Approximately two hundred fifty scholarships are awarded annually to prospective freshmen and approximately two hundred scholarships are awarded to upperclassmen. Students who are selected to receive one of the special scholarships awarded by the college are usually not considered for the general scholarship of \$100 awarded to freshmen and upperclassmen.

Scholarships are awarded on the basis of academic achievement, character, promise of growth, and, in some cases, financial need. Any application for a scholarship based on financial need must be accompanied by an application for financial aid. All scholarships are one-year awards and are renewable on a competitive basis unless specified otherwise.

Cash stipends given to scholarship recipients vary in amount, depending on the student's need, and such stipends can be supplemented by grants, loans, and work opportunities provided by the college. Scholarship recipients who apply for scholarship amounts beyond the minimum stipend must also apply for financial aid. All students holding scholarships awarded by the college are expected to meet part of their own expenses.

Application forms for freshman scholarships are enclosed with admission forms. Applications are reviewed as they are received, beginning in December, and applicants are notified immediately of the results of this review. Applications must be submitted by February 1 to be guaranteed consideration. A freshman scholarship applicant must also arrange for two letters of recommendation to support his/her application and must have his/her Scholastic Aptitude Test or American College Test scores reported to the college before February 1, if these scores are to be used in evaluating the application.

Applications for upperclassmen scholarships are available from the Office of Scholarships and Financial Aid unless specified otherwise and must be submitted by March 1.

FRESHMAN SCHOLARSHIPS AND AWARDS

Freshman Honor Scholarships. Each year the college awards up to twelve Honor Scholarships to students of superior academic achievement. The minimum stipend is \$150; it can be supplemented by an additional stipend up to 80 per cent of the student's need and by work opportunities and loans. A student will automatically be considered for this scholarship if he has applied for the Calvin College Freshman Scholarship.

Freshman Scholarships. These are awarded to entering freshmen who have done excellent work in high school. The minimum stipend is \$100, but this can be supplemented by an additional stipend up to 40 per cent of a student's need and by work opportunities and loans. Typically, at least one scholarship is offered to a graduate from each Christian high school.

National Merit Semi-Finalists. Calvin College awards a Freshman Scholarship to each prospective freshman who has received National Merit Semi-Finalist standing and who indicates this on his application for a Calvin scholarship.

Calvin College National Merit Scholarship. Calvin College annually sponsors one four-year scholarship for a National Merit Finalist. The selection procedure is determined by the National Merit Scholarship Corporation. Prospective students who indicate Calvin College as their first-choice institution will be considered for this award.

The Alvin M. Bentley Foundation Scholarship. Calvin College has been allocated one \$750 scholarship, to be awarded each year under the Alvin M. Bentley Foundation Scholarship Plan. The award is intended for an outstanding high school senior who is a resident of the state of Michigan, and who is seeking admission to Calvin College. The same general dates for other scholarships will be used in the selection of a candidate for the Bentley Scholarship. The student is expected to have outstanding talents. Consideration will be given to scholarship, character, personality, promise of growth, and financial need.

Kent Medical Foundation Grants. Each year the Kent Medical Foundation provides the college with funds to be awarded to qualified students. These grants are designed for students who are residents of Kent County or vicinities bordering thereon and who have not received a professional degree. To qualify for a grant a student must be matriculated in a health career recognized as

scientific in nature. Upperclassmen, as well as freshmen, are eligible to apply for this grant.

Leonard M. Krull Scholarship Aid Fund. As a result of a bequest to Calvin College by the late Leonard M. Krull of Westborough, Massachusetts, three scholarships are available each year to prospective freshmen from the Whitinsville, Massachusetts, area. Two of the scholarships are one-year awards of \$200 each; the third scholarship is a \$500 award based on financial need and is renewable for up to four years of study. Selection is made by the Scholarship Committee in consultation with a representative committee from the Whitinsville area.

Bergsma Brothers, Incorporated, Scholarship Program. Bergsma Brothers, Incorporated, of Grand Rapids, Michigan, annually offers one scholarship of \$2,000 to a student planning to enter full-time Christian service with the Christian Reformed Church or its related agencies. This scholarship is awarded on the basis of academic achievement, character, promise of growth, and financial need.

Steven D. Lankester Scholarship Program. As a result of a bequest by the late Steven D. Lankester to the Grand Rapids Foundation, a number of \$500 scholarships are available each year to students from Kent County. Normally two such scholarships will be awarded each year to prospective freshmen. These scholarships are awarded on the basis of academic achievement, character, promise of growth, and financial need. Recipients of this scholarship who wish to be considered for renewal must reapply each year.

FRESHMAN GRANTS NOT ADMINISTERED BY THE COLLEGE

State of Michigan Competitive Scholarships. Each year the Michigan Higher Education Assistance Authority awards a number of state scholarships to beginning freshmen. These scholarships are to be used for tuition and fees and are not to exceed \$1,200. Scholarship winners must demonstrate college potential and financial need. To be eligible for consideration for a state scholarship,

each applicant must: (1) qualify as a result of his performance on the national test administered by the American College Testing Program, (2) be a continuous resident of Michigan for 18 months prior to the date of the application, (3) have successfully completed the program of instruction at a Michigan high school or be currently enrolled as a student at such a school and engaged in

a program which will be completed by the end of August, and (4) be a person of good moral character. Additional information and application forms can be secured from the principal's office of any Michigan high school.

Freshman Alumni Grants. Since 1966 the Calvin Alumni Association has given a large number of freshman grants of \$150 each to qualified high school seniors who are in need of special financial assistance. Candidates for these awards are nominated by local alumni chapters or by high school principals and counselors.

Calvin Alumni Chapter Scholarships. Various alumni chapters offer scholarships to Calvin students which are administered locally. Candidates should consult a member of the local alumni chapter.

The Atlantic Monthly Scholarship. The Atlantic Monthly offers a \$500 scholarship each year to the winner of its Creative Writing Contest for high school students. Calvin College participates in this program by offering a supplementary grant based upon the needs of the winner, if he enrolls at Calvin College. The selection is made by The Atlantic Monthly Company. Complete details concerning this contest can be secured by writing to the Atlantic High School and Private School Contest, 8 Arlington Street, Boston, Massachusetts 02116.

Henry Beets Mission Society Scholarship. The Henry Beets Mission Society of the La Grave Avenue Christian Reformed Church provides an annual grant to promote the ministry of the Church to the American Indian. Initial funds for this grant were given by the Herrick Foundation of Detroit, Michigan. Those eligible are American Indians who intend, preferably, to minister as pastors or teachers to members of their own race. The amount of the grant is determined by the needs of the student. The student shall consult with the regis-

trar when planning his program. Candidates should apply in writing to the Henry Beets Mission Society, La Grave Avenue Christian Reformed Church, 107 La Grave Avenue, Grand Rapids, Michigan 49503.

Peter M. Hekman Memorial Scholarship. The Hekman family, in memory of Mr. Peter M. Hekman, provides one \$200 tuition scholarship for the freshman year to a senior graduating from the Ripon Christian High School. The scholarship is awarded on the basis of the applicant's scholastic achievement and financial need. Application forms are available at the office of the Ripon Christian High School.

George M. Pullman Educational Foundation Scholarships. The George M. Pullman Educational Foundation awards each year a number of scholarships to college students with financial need. Applicants should be residents of Cook County, Illinois. Non-resident of Cook County, Illinois, are eligible for consideration only if they are sons or daughters of employees of the Pullman-Standard Car Manufacturing Company or of the Pullman Company.

Applications are accepted from entering freshmen and from current under-graduating students. The application deadline for entering freshmen is January 15, and for current undergraduate students April 15. High school seniors should obtain information about application procedures from high school placement officials. Other candidates should address their inquiries to the Educational Director, George M. Pullman Education Foundation, 1451 East 55th Street, Chicago, Illinois 60615. The National Merit Scholarship Qualifying Test or the College Board Scholastic Aptitude Test is required of prospective freshman candidates. Arrangements to take either of these tests must normally be made before December of the senior year of high school.

SOPHOMORE, JUNIOR, AND SENIOR SCHOLARSHIPS AND AWARDS

Upperclassman Scholarships. Each year Calvin College offers a number of scholarships to members of the freshman,

sophomore, and junior classes who have achieved superior records in their previous college work. The minimum stu-

pend is \$100, but this can be supplemented by an additional stipend up to 40 per cent of a student's need and by work opportunities and loans. Holders of Freshman Honor Scholarships and Calvin College Scholarships, as well as other qualified students, are encouraged to apply for Upperclassman Scholarships.

Alumni-Faculty Memorial Scholarships. The Calvin Alumni Association each year provides the college, in memory of deceased college faculty members, with annual scholarship grants. Candidates for these scholarships are selected by the Scholarship Committee and are interviewed by the Alumni Board. There are usually five scholarships of \$300 each awarded each year.

Bergsma Brothers, Incorporated, Scholarship Program. Bergsma Brothers, Incorporated, of Grand Rapids, Michigan, annually offers one scholarship of \$2,000 to a student planning to enter full-time Christian service with the Christian Reformed Church or its related agencies. This scholarship is awarded on the basis of academic achievement, character, promise of growth, and financial need. Priority consideration in the awarding of this scholarship will be given to a request for renewal if the student continues to qualify under the guidelines of the program.

Dr. John W. Brink Memorial Scholarship. One scholarship in the amount of \$300 is awarded each year in memory of Dr. John W. Brink to a premedical student for use in his junior or senior year at Calvin College. Selection shall be on the basis of academic achievement, character, and promise of growth.

Dr. Harry Kok Memorial Scholarship. An annual scholarship of \$400 is presented each year, in memory of Dr. Harry Kok, to a junior student for use in his senior year at Calvin College. The award is given primarily for achievement in scholarship, although other factors, such as financial need, will be taken into account. This scholarship is not limited to students who make formal application.

Dr. John De Vries Memorial Award. An annual award of \$200 in memory of

Dr. John De Vries is presented each year to a student majoring in science for use in his junior or senior year. In making the award, the scholarship committee will give consideration to the applicant's scholarship, Christian character, financial need, personality, and promise of growth.

Edward D. Vander Brug Memorial Scholarship. Calvin College has received gifts from the Vander Brug family of Detroit, Michigan, the income of which is to be used to provide grant assistance to students of minority races. These gifts are in memory of the late Mr. Edward D. Vander Brug. Each year the college awards one grant of \$500 to a student of a minority race who is selected on the basis of academic ability, character, promise of growth, and financial need. Recipients may apply for renewal.

Henry Beets Mission Society Scholarship. For information on this grant to American Indians see the previous section.

Dow-Employees Scholarship Fund. The Dow-Employees Scholarship Fund provides Calvin College with an annual scholarship of \$500.

The stipend is to be given preferably to an outstanding science or engineering major in his junior year, or to a major in another department, if the college so elects, for use in his senior year. The recipient must have the ability, initiative, and personality to contribute to his field in coming years. The recipient is to be selected by the scholarship committee of the college on the recommendation of the department concerned.

Dutch Immigrant Society Scholarship. The Dutch Immigrant Society offers annually four scholarships of \$250 each to Calvin College upperclassmen. The applicant must be an immigrant or a child of immigrant parents. This award is granted on the basis of scholarship, Christian character and personality, and financial need. The application must specify why the candidate is eligible for this scholarship and indicate his need. The selection of candidates is made by the scholarship committee.

Spalink Memorial Missions Scholarship. An annual senior scholarship award of \$500 is presented by Mr. and Mrs. John Spalink, in memory of their son, John Spalink, Jr. Its purpose is to encourage superior students to enter missions. The scholarship is awarded to a junior student of either sex who shows a definite interest in a missionary vocation. The award is given primarily for academic achievement, although other factors, such as financial need, will be taken into account. Generally, members of the Christian Reformed Church who aspire to a career with that church's missions will be shown preference. The scholarship committee makes final determination of the award.

Kent Medical Foundation Grants. Each year the Kent Medical Foundation provides the college with funds to be awarded to qualified students. These grants are designated for students who are residents of Kent County or vicinities bordering thereon and who have not received a professional degree. To qualify for a grant a student must be matriculated in a health career recognized as scientific in nature.

Steelcase Foundation Scholarships. The Steelcase Foundation of Grand Rapids, Michigan, offers eight scholarships annually of \$250 each to applicants who are children of employees of Steelcase, Incorporated. The winners are selected by the Scholarship Committee of the college, and the applicants are to be judged on the basis of scholastic ability, character, and need. If scholarships are not filled by the children of Steelcase, Incorporated, employees, for whatever reasons, the scholarships are available to other Michigan residents.

Steven D. Lankester Scholarship Program. As a result of a bequest by the late Steven D. Lankester to the Grand Rapids Foundation, a number of \$500 scholarships are available each year to students from Kent County. These scholarships are awarded on the basis of academic achievement, character, promise of growth, and financial need. Recipients of this scholarship who wish to be considered for renewal must reapply each year.

Talen Scholarship Program. Each year Mr. Clare Talen of Menominee, Wisconsin, provides the college with \$800 to be used for two scholarships for upperclassmen. One scholarship is awarded to a junior preseminary student for use in his senior year; the second is awarded to a top student in any other area. Selection is made on the basis of academic achievement, character, promise of growth, and financial need.

Ralph Gelmer Vander Laan Memorial Scholarship. Mr. and Mrs. Joseph W. Vander Laan, in honor of Mr. Vander Laan's brother, provide annually one scholarship of \$500 for a prospective junior or senior student who is pursuing a program in one of the health professions, with preference being given to those who are interested in missions or some sort of Christian service. Other criteria include the student's academic record, character, and need.

The Cayvan Award in Strings. An annual award of \$200 is offered to an outstanding sophomore or junior player of violin, viola, cello, or bass viol for use during his junior or senior year. Selection shall be made by the Department of Music on the basis of proficiency in performance on the instrument, evidence of sound musicianship, academic achievement, and participation in the college orchestra and in a chamber music ensemble. If this award affects the student's eligibility for either the Michigan Scholarship or Tuition Grant, \$100 of the award shall be used for two semesters of private lessons. Application blanks can be obtained from the Department of Music office.

Music Department Upperclassman Scholarship. One or more annual awards of \$200 is offered to outstanding sophomore or junior music majors for use during their junior or senior years. The recipient will be judged by the following criteria in this order: academic achievement; evidence of sound musical understanding through writing, other creative achievements such as composition, performance ability and contribution; and the nature of the student's program. Selection will be made by the Music Department. If this award affects the stu-

dent's eligibility for the Michigan Scholarship or Tuition Grant, \$100 of the award shall be used for two semesters of private lessons. Application blanks should be obtained from the Department of Music office.

Alumni Players Upperclassmen Music Award. The Alumni Players of Calvin College have provided the Department of Music with funds to make one or more annual awards of \$200 each to an outstanding sophomore or junior music major for use in the junior or senior year. Applicants shall be judged by the following criteria: proficiency in performance, overall contribution to the musical life of the college, grade point average, particularly in music, and active participation in college ensembles. If this award affects the student's eligibility for a Michigan Scholarship or Tuition Grant, \$100 of the award shall be used for two semesters of private lessons. Application blanks should be obtained from the Department of Music.

Helene Hekman Gezon Voice Award. Contributions have been received by the college in memory of Mrs. Gezon which will provide the Department of Music with funds to make an annual award of \$300 to an outstanding sophomore or junior voice student for use in the junior or senior year. Applicants shall be judged on the basis of proficiency in performance as a singer, evidence of sound overall musicianship, and grade point average, especially in music. If this award affects the student's eligibility for a Michigan Scholarship or Tuition Grant, \$100 of the award shall be used for two semesters of private lessons. Application blanks should be obtained from the Department of Music office.

Summer School Scholarship. Twelve scholarships in the amount of \$200 each, one for each National Union of Christian Schools district, will be available to Christian school teachers for undergraduate study at Calvin College during the summer of 1975. The National Union and Calvin College each contributes \$1,200 for this undergraduate program. The cash awards must be used for payment of tuition and other expenses involved in work for personal and professional enrichment, work toward the validation of a teaching certificate, or toward a degree at Calvin College.

To be eligible for a scholarship the teacher:

1. Must have completed three years of successful teaching in the Christian schools.
2. Must be able to produce satisfactory evidence of possessing:
 - a. Ability to pursue academic work successfully.
 - b. Qualities of personality, character, and conviction that are assets to a Christian teacher.
 - c. Loyalty to the Reformed faith.
 - d. Superior teaching ability.
3. Must agree to serve a National Union member school at least one year after receiving a scholarship.
4. Must submit a statement of 250 words or less on the reason(s) for applying for a scholarship.

For details and applications for these scholarships and for grants-in-aid write directly to the Director of Scholarships, National Union of Christian Schools, 865 - 28th Street, S.E., Grand Rapids, Michigan 49508.

Application must be made by February 1.

STUDENT AWARDS

Anna Bruinsma Award in Music. The interest on \$750, given by the late H. J. Bruinsma of Grand Rapids in honor of his deceased wife, one of Calvin's alumnae, is to be used in the Department of Music, two-thirds of it serving as first, and the remaining third, as second prize. This award is open only to seniors.

Oratorio Society Applied Music Awards. A number of awards of \$200 each are

presented by the Calvin College Oratorio Society to prospective freshmen. These awards are given to instrumentalists and vocalists who can meet college admission requirements, who have records of superior achievement in high school music activities, and who give evidence of outstanding talent and musicianship in audition. Recipients are expected to participate in the scheduled rehearsals and

performances of at least one of the following: concert band, varsity band, orchestra, choir, oratorio chorus. For application procedure, see award below.

Vander Heide Voice Award. An award of \$200 is offered annually by Mr. and Mrs. Jan S. Vander Heide to a vocalist who can meet Calvin College admission requirements and who has a record of superior achievement in high school music activities. The award is applied to four semesters of private voice lessons. The recipient will be expected to participate in the scheduled rehearsals and performances of at least one faculty-directed choral ensemble. Only freshmen are eligible. Applicants will be judged on the basis of evidence of talent and musicianship.

The deadline for applying for the Oratorio Society and Vander Heide awards is April 1. Application blanks and additional information are available from Mr. Geerdes of the Music Department. Awards are announced by April 15.

Baker Extemporaneous Speaking Awards. Through the generosity of the Baker Book House of Grand Rapids, Michigan, credit vouchers for the purchase of books are awarded annually to the first, second, and third place winners in both the men's and women's divisions of the Extemporaneous Speaking Contest. In each division the winners of first, second, and third places are awarded credit vouchers of \$25, \$10, and \$5, respectively. The first place winners of each division represent Calvin College at the annual State Extemporaneous Speaking Contest.

Broodman Oratorical Awards. Through the generosity of the Broodman family of Grand Rapids, Michigan, a gold medal and a \$25 Savings Bond are awarded to the first place winner in a men's oratorical contest. Silver and bronze medals are given annually to the winners of the second and third places, respectively, in a men's oratorical contest. These awards are presented in memory of the late Dr. G. J. Broodman. The first-place winner represents Calvin College in the State Oratorical Contest of the Michigan Intercollegiate Speech League.

Drama-Interpretative Reading Awards. An anonymous donor annually presents the Speech Department with \$100 to be used as awards in the areas of drama and interpretative reading. This enables the Speech Department each year to make the following awards:

1. A \$25 award to a senior student who has done outstanding work in acting in Thespian productions.
2. A \$25 award to a senior student who has made valuable contributions in the areas of the technical aspects of Thespian productions.
3. \$15 awards to each of the two students selected to represent Calvin College at the League Division of the Annual Interpretative Reading Festival of the Michigan Intercollegiate Speech League.
4. \$10 awards to each of the two students selected to represent our college at the Junior Division of the Annual Interpretative Reading Festival.

Monsma Speech Award. Each year Dr. and Mrs. John W. Monsma, Jr., offer an award of \$100 to a student majoring in speech. The award is usually given to an undergraduate planning to return to Calvin for additional study and is given on the basis of the student's academic record, his character, and his personality. The Speech Department selects the nominee to receive the award.

F. M. and E. P. ten Hoor Prize. The college has received a bequest from the late Mrs. Marie M. ten Hoor, the income of which is to be awarded to an outstanding student at the college for use in the junior or senior year. This prize of \$50 will be awarded by the Scholarship Committee to a student with an outstanding record who has not been selected to receive one of the special scholarships awarded by the college.

Thespian Oratorical Awards. The Thespians, dramatics club of Calvin College, offers three awards in oratory for women, of \$15, \$10, and \$5.

The first award winner represents Calvin College in the State Oratorical Contest of the Michigan Intercollegiate Speech League.

The Beets Calvinism Award. The late Dr. and Mrs. Henry Beets established a fund which now amounts to \$1,500, the income of which is to constitute a prize for the best essay or term paper on Calvinism, in any of its expressions, written each year by a Calvin College student. The prize will be awarded at the discretion of the Department of Re-

ligion and Theology, in consultation with the president of Calvin College. If, during any given year, the Department of Religion and Theology considers the essays or papers submitted of insufficient merit to deserve the prize, the interest of such a year, or years, will be added to the principal.

POST-GRADUATE FELLOWSHIPS

The William B. Eerdmans Literary Awards. The late Mr. William B. Eerdmans, Sr., established the William B. Eerdmans Literary Awards in the interest of encouraging original, creative writing among Calvin College students.

Under the terms of the foundation three awards—first, \$35; second, \$25; third, \$15 are made. Any type of original writing is eligible for an award, whether it be poetry, fiction, or essay, creative or critical, seriously reflective, or delightfully amusing.

The Rinck Memorial Award. A fund of \$2,500 has been subscribed by former students and friends as a memorial to William Rinck, Professor of Mathematics at Calvin College (1905 to 1920). The income of this fund is devoted to an award for outstanding work in mathematics. The prize is awarded annually to the senior student majoring in the Mathematics Department who has, in the opinion of the members of the department, done superior work in undergraduate mathematics.

Jewish Evangelization Award. Dr. and Mrs. William J. Yonker offer a prize of \$50 for the best essay and a prize of \$25 for the second-best essay on a subject bearing on the evangelization of the Jews. The contest is open to all college students.

Board of Trustees Scholarship. Calvin Seminary, under the authority of the Board of Trustees of Calvin College and Seminary, offers a scholarship consisting of \$500 to a member of the graduating class of Calvin College. The award will be made to a student who plans to enter Calvin Seminary and, eventually, the

ministry in the Christian Reformed Church.

Applications should be in the hands of the Scholarship Committee by March 1.

Competitive National Graduate Fellowships. Many competitive national fellowships are available to Calvin seniors with outstanding records. These include the Danforth Foundation fellowships, the Rhodes scholarships, the Marshall fellowships, the National Science Foundation fellowships, the various Fulbright grants, and many others. The conditions for these grants vary from year to year, as do the deadlines. For most of them, however, application must be made early in the fall and students are advised to take the Graduate Record Examinations at the earliest possible date. Students interested in any of these grants are advised to consult their departmental chairmen and the assistant dean for academic affairs.

University of Michigan State College Fellowships. These competitive, prestige fellowships to the Graduate School of by the university to students nominated \$2,400 plus tuition for an academic year's work, are open to students nominated through the scholarship committee. Up to twenty-four grants are made by the university to students nominated by various Michigan colleges and universities. For information, consult the assistant dean for academic affairs.

University of Michigan Scholarships for Graduate of the Three-Year Engineering Course. The University of Michigan offers up to three scholarships to students who have completed their three-year engineering course at Calvin Col-

lege and who transfer to the University of Michigan to complete their work for an engineering degree. The amount of these scholarships is \$500. Interested students should before March 1 consult with the chairman of the Engineering Department, which makes its recommendation on the following criteria: a minimum grade point average of 3.0, completion of a minimum of twenty-eight courses at Calvin College, demonstration of serious interest in the activities of the department, and intention to apply for a Calvin Bachelor of Science degree

upon completion of the engineering degree requirements.

University of Michigan School of Business Administration Tuition Scholarship. This scholarship may be awarded annually to a graduate of Calvin College who has majored in business administration and who is recommended for the scholarship by the members of the Economics Department. Seniors who are interested should see the chairman of the Economics Department before February 15.



Academic

Requirements for degrees, honors, professional programs

THE PRIMARY FOCUS of a Christian liberal arts education at Calvin College is on teachers and students together engaging in the various scholarly disciplines, directed and enlightened in their inquiries by the Word of God. The faculty believes that in a complete liberal arts education the students should be introduced to the disciplines on two different levels.

In the first place, he should acquire a general or extensive education by following a rationally determined pattern of required and optional courses in the various major disciplines, the fundamental unifying element in this pattern being the Christian perspective within which all courses are presented. From this extensive study it is hoped that the student will acquire a knowledge of the more significant results or products of the various disciplines; an understanding of the methodologies of the disciplines, which will enable him to judge the products of the disciplines; and an acquaintance with alternative approaches to the same subject matter.

Secondly, the faculty believes that in addition to such a general or extensive education, each student should also be required to concentrate in some particular discipline and thus to supplement his extensive study of the disciplines with an intensive study of some one discipline. This intensive study will have fundamentally the same aims as those for the extensive study. In his field of concentration, however, the student can achieve the same aims more fully, more intensively, in more detail.

This Christian liberal arts philosophy permeates all of the degree programs of the college. Traditionally most students complete the Bachelor of Arts or the Bachelor of Science degree programs, either of which may include a teacher certification component. A Bachelor of Fine Arts degree with a professional art emphasis was introduced in 1974. Calvin College also offers a variety of cooperative bachelor of science degrees in conjunction with other institutions, in engineering, forestry, medical technology, natural resources, nursing, and special education (see pages 53-63) as well as a Bachelor of Science in Education degree in a combined curriculum plan with the Grand Rapids Baptist College.

BACHELOR OF ARTS, BACHELOR OF SCIENCE DEGREES

Because of the flexibility of the Calvin curriculum and the many alternative ways of meeting the formal requirements, including fulfillment by examination, faculty advisers assist students in working out their schedules each semester and are available at any time.

A typical student carrying a normal load will complete thirty-seven and a half courses including four interims. However, to provide flexibility, the formal graduation requirements are the successful completion of thirty-six courses including three interims and the designated liberal arts core with a minimum average grade of C (2.0) both overall and in an approved program of concentration. Not more than one course credit of basic physical education or two in applied music, drama, and speech may be applied to graduation requirements except when such courses are a designated part of a required major program.

Upon the satisfactory completion of these requirements, the student is eligible for a Bachelor of Arts degree. If he has completed at least fifteen courses in biology, chemistry, the earth sciences, engineering, mathematics, and physics, he may elect instead to receive a Bachelor of Science degree.

I. PROGRAMS OF CONCENTRATION

Every student must fulfill the requirements of some approved departmental or inter-departmental program of concentration. Although such majors are not officially chosen until the end of the sophomore year, certain programs do presuppose the completion of certain freshman and sophomore courses. Admission to major status is not automatic but requires the formal approval of the department or program chairman and the completion of a counseling form which details the student's remaining academic program. Such majors may be changed at any time.

To be eligible for acceptance in a given program of concentration, a student must have secured a minimum grade of C (2.0) in the course or courses designated by the department offering the program, he must maintain this average in the program, and he must present at least this average in his program of concentration at the time of his graduation. A student not maintaining a minimum grade of C (2.0) in his program of concentration may be permitted to remain in a program for single semester of probation. The programs of concentration are specified in the section of the catalog describing departmental programs and course offerings which begins on page 65.

Students may initiate cross-disciplinary programs of concentration other than those formally approved by the faculty. Such programs require the approval of the several department chairmen concerned and of the dean of the faculty, who will designate a program adviser.

II. INTERIM COURSES

A student must complete a minimum of three interim courses for graduation. (Transfer students must complete one interim course for each year in residence.) The grade for an interim course, except when decided otherwise by the faculty, shall be honors, satisfactory, or unsatisfactory. Interim courses are taught at three levels. Level I, open to any student; Level II, open to sophomores and juniors; Level III, open to juniors and seniors. A student is not permitted to take more than two interim courses in any single department, nor is he permitted to take more than two interim courses at any single level. Certain designated interim courses may meet core requirements and others may be included in a program of concentration.

Calvin College is associated with a number of similar colleges with January interim programs, making possible the exchange of students during the interim. Specific information is available from Mr. Charles J. Miller, the assistant dean for academic affairs.

III. THE LIBERAL ARTS CORE

The size of the required core is determined in part by the courses the student has taken during his last two years in high school. Although Calvin's liberal arts core apparently requires eighteen and a half courses, typically two or three are satisfied by high school performance and others may be satisfied by examination.

Six of the liberal arts courses provide the context for a Calvin education (history, philosophy, theology); eight provide an introduction to the major systematic disciplines (the sciences, the social sciences, the fine arts); two and a half assure a skill in the basic competencies (written and spoken rhetoric and physical education); and two, when preceded by language foundation in high school, provide a minimal mastery of a foreign language. These requirements may be met in many ways and by various courses during the student's four years at Calvin.

The variety of courses in each department which meet the liberal arts core are listed with the departmental offerings.

REQUIRED COURSES

6

History, philosophy, religion and theology

Typically these requirements are met by History 101 or 102; Philosophy 151-152 or 153, which is recommended in teacher education programs; one course in Religion and Theology from 103, 107, 108, 207, and 208 and one from 206, 301, 303, 304, 308, 311, and 312; with the remaining course or courses chosen from these departments and from Interdisciplinary 100, Christian Perspectives on Learning, and Interdisciplinary 234. Not more than one additional course may be selected from any one department; Education 304 or Philosophy 209 when taken in addition to Philosophy 153 satisfies a second philosophy requirement and should be taken by teacher education students.

Mathematics, physics, biology, chemistry, earth science

A student must show a certain level of accomplishment in mathematics and in the natural sciences which may be demonstrated by either high school courses completed with a minimum grade of C or by college courses.

The requirement in mathematics may be met by Senior Mathematics in high school or by Mathematics 109, 111, or 205. Students should consult the recommendations of the department in which they hope to concentrate before selecting a college course in mathematics.

The requirement in physical science may be met by a year of high school physics or by Physics 110, 112 (which is required for elementary students), 123, or by Astronomy 110. The requirement in biological science may be met by a second year of high school biology (Advanced Biology), by 105-106, or by any other course in biology. The two-course science requirement may also be met by completing a two-course sequence in Biology 121-122, Chemistry 103-104, Geology 251-252, Physics 123-124, Physics 126 and 225, or Physics 221-222.

Economics or political science and psychology or sociology

1-2

Typically these requirements are met by one course chosen from Economics 151, Political Science 151, 201 (if the student is in elementary teacher education), 210 (if the student is Canadian), and one course chosen from Education 301 (which is required in teacher education programs), Psychology 151, Sociology 151, or 217.

A student who during his last two years of high school has completed with a minimum average grade of C (2.0) either a full year's course in any one of these subjects or an integrated year-long course combining two or more of them, is required to take one rather than two courses in this group.

Art, literature in any language, music speech

2-3

Every student is required to take college-level work in English or American literature. The first course is typically selected from English 200, 202, 203, 212, or 303. Any literature course except for English 225 and 251 will satisfy the additional core requirements. At least one course must be taken in another department. Art 215 is recommended for students in elementary teacher education programs.

A student who during his last two years in high school has completed a year's course with a minimum average grade of C (2.0) in any one of these subjects or an integrated year-long course combining two or more of them, is required to take two rather than three courses in this group.

Written rhetoric, spoken rhetoric, physical education

2½

Every student must demonstrate his competence in written rhetoric either by examination or by passing English 100.

Every student must demonstrate his competence in spoken rhetoric by examination or by passing Speech 100, 200, 214 (if in elementary education), 240, or by examination.

Four semesters of participation in physical education are required. This is satisfied by not fewer than four quarter-courses from Physical Education 100-199. Students in elementary education programs may substitute 221 for one such quarter course.

Dutch, French, German, Greek, Latin, Spanish

0-4

A student must study one foreign language through the second-year college level. Typically all foreign language literature courses satisfy the "literature in any language" requirement above as well.

Languages other than those taught at Calvin may be accepted and students for whom English is a second language may be exempt from this requirement. Special three-course sequences (121-122-123), involving two semesters and the interim are available in French, German, and Spanish for any student whose high school record in the language was below C, who studied the language some time ago, or who is in a teacher education program without having studied a foreign language previously. Students are assigned to these courses by examination or by special departmental permission.

A student usually should complete the core requirements in mathematics, history, and written rhetoric by the end of his freshman year, and should complete the requirements in physical science, biological science, physical education, spoken rhetoric, and foreign language by the end of the sophomore year. At least one course in religion and theology should be taken in each of the student's first two years at Calvin. However, because of the demands of various programs of concentration, the particular courses chosen to meet the student's core requirements and his schedule for completing them should be worked out early with his academic adviser.

BACHELOR OF FINE ARTS DEGREE

A student wishing to obtain a Bachelor of Fine Arts degree (B.F.A.) in Art must successfully complete thirty-six courses, including three interim courses, the liberal arts core courses designated below, and the designated program of concentration.

The program of concentration requires at least four courses in the history of art (231, 232, 332, 340); at least eleven studio art courses (207, 208, 209, 210, 310, 311, 320, 325, 326, and two from 312, 313, 321, 377); two interim courses in art; and one course credit for a senior seminar which must include an exhibition.

The liberal arts core must include six courses from the contextual disciplines (History 101 or 102; Philosophy 153 and 208; Religion and Theology 103 and 301; and one course from these departments or Interdisciplinary 101, Christian Perspective on Learning); one core course from mathematics and the natural sciences; one core course from economics, political science, psychology, and sociology; either one foreign language through the second-year college level or two courses taught by a foreign language department from foreign culture and foreign literature in translation; the core requirements in written rhetoric (typically English 100), speech (typically Speech 100, 200, or 240), and basic physical education; and three core courses from literature, music, and speech. This last requirement is reduced to two courses if a student has completed a year's course in high school with a minimum average grade of C (2.0) in any one of three subjects; at least one of the three must be in American or English literature.

EXEMPTION AND COURSE CREDIT BY EXAMINATION

Students may meet any core requirement by examination, thus receiving an exemption, and may, except when the department concerned deems this inappropriate, earn regular academic credit for any course by examination. A student's performance on such tests becomes a part of his academic record, and he will be charged an appropriate fee.

Students should apply to the registrar by October 1 for the first semester or February 15 for the second if they wish to sit for either exemption or course credit examinations.

Entering freshmen are permitted to sit for a variety of examinations which either excuse them from taking a given course or which give them college credit for the course. These regulations are specified in the section on Advanced Standing on page 18.

THE HONORS PROGRAM

The General Honors Program provides flexibility and independence for the superior and self-motivated student. The Departmental Honors Program, which requires participation in the General Honors Program, intensifies the training in the student's major discipline and leads to an honors graduation designation.

A student is eligible for the General Honors Program if his cumulative grade point average is 3.3 or higher; incoming freshmen are eligible if their cumulative high school record meets this standard.

Students in the General Honors Program may register for a variety of types of honors courses—honors sections in large courses, special honors courses, or honors registration in regular courses for which intensified work will be required. No student may carry more than two such courses at a time. Students in the program may avail themselves of the right to be exempt from core course requirements by examination and of the right to propose cross-disciplinary programs of concentration.

To graduates with honors, students must complete at least six honors courses with an average of 3.0 including the structured honors requirements of their major departments, which must include at least two departmental honors courses. Before applying to the department the student must have completed at least two honors courses in some department and must be maintaining a cumulative average of 3.3 or higher. Juniors and seniors in such Departmental Honors Programs may, subject to the approval of their chairman, register for a fifth course, which will be graded on the basis of satisfactory or unsatisfactory.

The honors programs are under the supervision of Mr. Charles J. Miller, assistant dean for academic affairs.

YEAR-ABROAD PROGRAMS IN FRANCE, SPAIN, AND AUSTRIA

In cooperation with Central College, Calvin College offers twelve-month, three-semester study programs in Paris; in Vienna, after a summer in Germany; and in Madrid at a cost only somewhat higher than the cost of a year in residence on campus. To be eligible a student must have completed the study of the appropriate language through the second-year level.

This unique program utilizes an intensive summer semester to assist the student in developing a level of language proficiency which will enable him to enroll in regular university courses and to participate freely in the cultural life of the country. Such courses include not merely those in language and literature but may include those in art, history, music, philosophy, and psychology.

A student may earn up to three course credits during the summer and an additional nine during the regular academic year. The international studies coordinator for these programs is Mr. James Lamse.

CHICAGO METROPOLITAN STUDY CENTER

The Chicago Metropolitan Study Center sponsored by Trinity Christian College in cooperation with Calvin, Central, Dordt, Hope, and Northwestern colleges provides an opportunity for students to receive a semester's credit while studying and being involved in an internship experience in the heart of Chicago. The program can be appropriate for a variety of majors including economics, history, psychology, and sociology. For details consult Mr. Ronald Vander Kooi of the Sociology Department.

WASHINGTON SEMESTER PROGRAM

Calvin College is a participant in American University's Washington Semester Program, which enables selected students to spend a semester in Washington, D.C. at the American University, studying and observing political institutions and processes. Seminars, small group discussions with political leaders, a major independent research project, and observation of governmental institutions form the major portion of the program.

Typically students participate in the program during their junior year. At least one course in American politics and a 3.0 grade point average are the prerequisites for participation in the program. Mr. P. Henry of the Political Science Department is the faculty adviser.

TEACHER EDUCATION PROGRAMS

Students wishing to be teachers should apply for admission to a specific teacher education program at the Department of Education by April 1 of their sophomore year. At the time of admission and when applying

for an assignment to a teaching internship (Education 345 or 346) a student must be maintaining a minimum cumulative average of C (2.0). Students entering the program after the sophomore year may need more than four years to complete their programs.

The requirements given below satisfy both the college requirements for a bachelor's degree and the State of Michigan requirements for a provisional teacher's certificate.¹ Students interested in teaching in Canada can meet all or most of the teacher licensing requirements for any province by attending Calvin College. Under the present requirements, a student completing the appropriate teacher education program at Calvin is able to go directly into teaching at the elementary or secondary level in all provinces except Ontario. To obtain a professional certificate for teaching at either the elementary or secondary level in Ontario, the student must complete: (1) An acceptable bachelor's degree containing 120 semester hours (or 36 course units) of liberal arts or science courses. Physical education courses and any courses offered by the Department of Education normally do not count towards this total. (2) 30 semester hours (or 9 course units) of professional education courses, including student teaching. A normal teacher education program at Calvin can be modified to meet this requirement. (3) A valid teacher's certificate from the local jurisdiction—in this case, the State of Michigan. This program would generally involve five years at Calvin, or four years after Grade 13. Students intending to teach in Christian schools in Ontario may not be required to meet these standards. Since Canadian standards are changing, it is wise to keep up to date on these matters. For current information or any further clarification, contact Miss Madge Strikwerda, director of teacher certification, or Mr. Charles J. Miller, assistant dean for academic affairs.

Graduates who have earned a Michigan Provisional Certificate since July, 1970, must complete a 5.2 course unit (18 sem. hrs.) planned program or enroll in a master's degree program to qualify for a Continuing Certificate. Graduates seeking such certification should consult the director of teacher certification, Miss Madge Strikwerda.

Calvin College is introducing a Master of Arts in Teaching (MAT) degree with a curriculum planned to strengthen teaching in the classroom. Although various emphases will be possible, at least a third of any program will be in advanced professional education courses and a third in appropriate teaching fields.

¹ In summary, the Michigan code requires: 40 hours of general education, a 30 hour departmental major or a 36 hour group major, a 20 hour departmental minor or a 24 hour group minor, and 20 hours of professional education.

Guidance and counseling programs normally require the completion of a certification program in either elementary or secondary education and several years of successful teaching experience before specialization is permitted. Some concentration in psychology or sociology is desirable but not necessary.

Elementary education. The minimum elementary education program requires the completion of the general education requirements (See pages 41-45 for the courses recommended for students in teacher education); either an approved group concentration of ten and a half courses or a departmental concentration of eight and a half courses; a planned program of six courses in other subjects which are related to elementary education or a six-course departmental minor; and six professional education courses. Programs should be worked out with Mr. William Hendricks, coordinator of elementary education, and have the written approval of an adviser in the area of concentration.

An eight and a half course departmental concentration may be selected from the following subjects: art, biology, English, foreign language (French, Dutch, German, Latin, Spanish), history, music, mathematics, physical education, political science, and speech.

Most students in elementary education programs, however, complete group concentrations which consist of at least ten and a half courses, of which a minimum of five shall be in one subject listed above, a minimum of three in another subject, and the remaining courses in the same or related subjects. Model programs are listed below but students may consult the appropriate department for further advice.

LANGUAGE ARTS STUDIES GROUP MAJOR. English 100 and Speech 214 are required. Students majoring in this group must also complete one of the following five-course departmental programs: English 100, 200, 225, and two others; Speech 203, 214, 215, and two others; German 201, 202, 215, and two from 216, 217, 218, 250; French 201, 202, 321, and two other advanced courses; Spanish 201, 202, 321, and two other advanced courses. In addition students must complete the three designated courses from a second department in this group. The remainder of the ten and a half courses and the electives must be chosen from departments in this group with the approval of an adviser from one of the departments.

SOCIAL STUDIES GROUP MAJOR. The four required courses for this major are History 101 or 102; Sociology 151; either Economics 151 or Political Science 201 (United States), 210 (Canada), or 151; and either Geography 101 or, if part of the three-course sequence below, Earth Science 113. Students must also complete one of the following five-course departmental sequences: Economics 151, 321 or 322, and three others; History 101 or 102 and four others; Political Science 151, 201, and three others; Psychology 151, 204, 310, and two others; Sociology 151 and four others. In addition a student must complete three courses from a second department in this group, including any course designated above, or from a sequence in geography consisting of Earth Science 113 and Geography 201 and 210. Students may not take sequences in both psychology and sociology. The remainder of the ten and a half courses and the

electives must be chosen from departments in this group with the approval of an adviser from one of the departments.

GENERAL SCIENCE STUDIES GROUP MAJOR. The four required courses for this major are: Biology 111 or 121; Earth Science 113; Mathematics 109 or 111; and Physics 112, 123, 222, or 225. The five-course sequence can be met by either of two broad programs or by narrower departmental ones. The biological science sequence requires Biology 111 or 121, 115, 116, and two others; the physical science sequence requires Physics 112, Earth Science 113, Chemistry 113, Astronomy 110, and one other. The departmental sequences are: Biology 121, 122, 221, 222, and one other; Chemistry 103-104 or 113-114 and three others; Mathematics 111, 112, and three others; Physics 126, 225, 226, and two others or Physics 123, 124, 225, 226, and one other. In addition, a student must complete a three-course departmental sequence of Chemistry 103-104 or 113-114 and one other; Mathematics 109 and two others or Mathematics 111, 112, and one other; Physics 123-124, 126-225, or 221-222 and one other; Earth Science 113 plus Geography 201 and 210 or plus Geology 252 and one other. The remainder of the required ten and a half courses and the electives must be chosen from other departments in this group with the approval of the science adviser, Mr. Clarence Menninga.

FINE ARTS STUDIES MAJOR. Required are Art 215, Speech 214, and Music 222 or, if the student is completing a sequence in music, Music 331. Students majoring in this group must complete a five-course departmental sequence from: Art 151, 207, 208, 215, and one other; Music 103, 104, 203, 302, 331; and, in drama, Speech 203, 214, 219, 317, and an elective from 304, 318, or an approved interim course. In addition, a student must complete one of the following three-course sequences: Art 151, 207, 215; Music 211, 212, and 222; Music 103, 104, and 331; Speech 203, 214, and 219. The remainder of the ten and a half courses and the electives must be chosen from other departments in this group with the approval of an adviser from one of the departments.

The appropriate education courses for students in elementary education are 301, 303, 304, 305, 322, 345, and 355. The six-course planned program required for Michigan certification typically is met automatically by students meeting the general graduation requirements. Courses recommended for this dual function include: Art 206, Biology 111, English 100 and any literature course in English or in a foreign language, Earth Science 101 or 113, History 101 or 102 and any other history course, Mathematics 109 or 111, Music 222 or 331, Physics 112, Psychology 204, Political Science 151, 201, or 210, and Speech 214. Physical Education 221 is recommended as a substitute for one semester of basic physical education.

Middle school education. The middle school program is planned for students who wish to teach in grades six, seven, or eight, or who are not ready to choose between elementary (k-8) or secondary (7-12) certification.

The requirements of both certification programs may be met by careful scheduling, permitting the student to defer choosing either an elementary or secondary certificate until graduation or until he has obtained a teaching position. The sections describing the requirements for elementary and secondary education refer to such middle school programs. A student internship seminar in middle school education will be scheduled during

certain semesters. For information consult either Mr. William Hendricks, coordinator of elementary education, or Mr. Philip Lucasse, coordinator of secondary education.

Secondary education. The minimum secondary program requires the completion of the general graduation requirements (See pages 41-45 for the courses recommended for students in teacher education); a departmental concentration of eight and half courses or a group concentration of ten and a half courses; a minor of six courses in another department or a group minor of seven; and six professional education courses. Programs should be worked out with the appropriate departmental adviser. For specific problems a student should consult Mr. Philip Lucasse, coordinator of secondary education.

The programs of concentration shall be selected from the following subject areas: art, biology, chemistry, Dutch, economics, English, French, German, history, Latin, mathematics, music, physics, physical education, political science, Spanish, and speech. The minor shall be selected from these subject areas or from psychology, religion and theology (the academic study of religions), and sociology. Concentrations in business education, industrial arts, and home economics, subjects not taught at Calvin, are possible when work in these fields is completed at other accredited institutions.

Group concentrations have particular advantages for middle or junior high school programs. A major group concentration consists of at least ten and a half courses, five of which must be in one department, three in another, and the remaining in either the same or related subjects. Such concentrations may be in the language arts (English, foreign language, speech), the sciences (earth science, biology, chemistry, mathematics, and physics), and the social sciences (economics, history, and political science). Group minors of seven courses with the minimum of three in one subject may be chosen from these same areas and from the humanities (art, literature in any language, music, philosophy, religion and theology, the social studies including psychology and sociology, and speech).

The North Central Association requires that teachers in the schools they accredit have the following minimum preparation in each of their teaching fields: *art*, seven course units; *English*, seven course units, one half of which may be in speech; *foreign language*, six course units in any language taught; *mathematics*, six course units; *music*, seven course units; *physical education*, six course units; *science*, a total of seven with at least three and a half in any science taught; *social science* (economics, U.S. history, world history, political science, sociology), a total of seven course units with at least two and a half in any subject taught; *speech*, seven course units, one half of which may be in English.

The appropriate education courses for students in secondary and middle school programs are: 301, 303, 304, 346, and 356.

The Bachelor of Science in Special Education degree program. Calvin College in cooperation with Grand Valley State Colleges offers a Bachelor of Science in Special Education degree which leads to regular certification at the elementary or secondary level as well as to special education certification. Students in the programs must complete a designated core of thirteen liberal arts courses, must meet the professional education requirements for either elementary or secondary certification, must meet an appropriate departmental or inter-departmental group program of concentration, and must meet the additional requirements for certification in special education.

Specific special education programs vary in length from a minimum of four years and one summer for those in the regular track programs to four years and three summers for those in the internship programs. Furthermore, the particular teaching major chosen and the type of certification sought, introduce variables. Students in special education fields requiring internships take their first Grand Valley course during the summer following their sophomore year; others take their first Grand Valley course during the first semester of their junior year. Students interested in any phase of special education should consult with Mr. Thomas Hoeksema, the adviser of the programs, as early as possible.

Certification can be obtained in the following areas:

1. Regular track: trainable and severely mentally impaired; emotionally impaired.
2. Regular track: trainable and severely mentally impaired; physically and otherwise health impaired.
3. Internship program: learning disabled; emotionally impaired; educable mentally impaired.
4. Internship program: hearing impaired; educable mentally impaired.
5. Internship program: hearing impaired; emotionally impaired.
6. Internship program: hearing impaired; physically and otherwise health impaired.

The liberal arts core for students in the special education programs is four course from the contextual disciplines—Education 304, Philosophy 153, one core course in religion and theology, and one core course from history; two core courses from biology, chemistry, earth science, mathematics, and physics; two core courses in the social sciences, which normally are met by the major or professional education programs; three core courses from art, literature, foreign language courses beyond the first year

college level, music, speech, and foreign culture; English 100 or its equivalent; and a total of one course unit from core courses in speech and basic physical education.

The typical program given below suggests the desirable sequence of education and psychology courses:

<i>First year</i>	COURSES
English 100	1
History 101 or 102	1
Mathematics 109 or Physics 112	1
Philosophy 153	1
Physical education	1/2
Psychology 151 (first sem.), 204	2
Religion and Theology 103	1
Sociology 151	1
Elective	1

<i>Second year</i>	COURSES
Art 215	1
Earth Science 113 or other science core	1
Education 301-303 (second sem.)	2
Literature	1
Political Science 151 or Economics 151	1
Physical education	1/2
Psychology 211	1
Special Education 216 (first sem.)	1
Elective	1

PROFESSIONAL AND PREPROFESSIONAL PROGRAMS

Programs at Calvin College prepare students for admission to the various professional schools and, in some cases, through cooperation with other institutions, for completion of professional programs while at Calvin. In most cases students may qualify for a degree from the college as well as from a professional program if they meet the appropriate requirements.

ARCHITECTURE

The program leading to the Master of Architecture degree, the professional degree in the field, typically requires six years, two of which may be completed at Calvin College. Students interested in such a program should consult Mr. Edgar Boevé of the Art Department or Mr. James Bosscher of the Engineering Department. The program incorporates a significant portion of the basic core curriculum as well as of the preprofessional requirements of the profession. A typical program would be:

<i>First year</i>	COURSES
Art 231	1
English 100	1
Engineering 101	1
Mathematics 107	1/2
Mathematics 111, 112	2
Interdisciplinary 100, Christian Perspectives (interim)	1



Economics 151	1
Philosophy 153	1
Speech 100	1/2
Physical Education	1/2

<i>Second year</i>	COURSES
Art, studio drawing or design	2
Chemistry, if none in high school; biology; or psychology	1
Physics 221, 222	2
Economics, history, political science, or sociology	2
Literature	1
Religion and Theology	1

BUSINESS ADMINISTRATION

Balanced preparation for a business career is provided by meeting the general degree requirements (page 41) and the Business Economics concentration in the Department of Economics and Business. This program provides a minimum of twelve courses—the equivalent of forty-two semester hours—in business economics and related mathematics courses. See page 79 for a full description of departmental major and cognate requirements. This concentration along with the general graduation requirements provides a substantial undergraduate coverage of the functions of the business firm, an understanding of the environment of business and human behavior, and an opportunity to develop one's personal Christian commitment and ethical sensitivity. Completion of the program provides a proper preparation for entry into a variety of business occupations as well as a foundation for graduate study in business.

A representative program is given below. Electives may be used for additional business courses or to fulfill other interests.

<i>First year</i>	COURSES
Interdisciplinary 100, Christian Perspectives	1
Economics 151	1
English 100	1
History 101 or 102	1
Foreign Language	2
Mathematics 205-206 or 111-112	2
Physical education	1/2
Religion and Theology	1
Speech 100	1/2

<i>Second year</i>	COURSES
Art, music, speech	1
Biology 111	1
Economics 207, 212	2
Mathematics 106 or 107	1/2
Philosophy 151-152 or 153 and 205 or 207	2
Physical education	1/2
Physics 110, Physical Science	1
Psychology or sociology	1
Elective	1

<i>Third year</i>	COURSES
Economics 309	1
Economics 313	1
Economics 316	1
Economics 322	1
Literature	1
Religion and Theology	1
Electives	3

<i>Fourth year</i>	COURSES
Economics 318	1
Economics 321	1
Economics 331-339 or 400	1
Electives	5-6

Students may also complete two years at Calvin prior to transferring to another institution for a B.B.A. program.

ENGINEERING

Students planning to enter the engineering program should consult with Mr. James Bosscher, chairman of the Department of Engineering, when arranging their programs. Students wishing to graduate from Calvin College on the combined curriculum plan are advised to complete the twenty-eight course program below. (A minimum of twenty-seven courses and a minimum cumulative grade point average of C is required.) If a student completes this program and subsequently completes a degree program at a recognized school of engineering, which typically requires an additional three semesters, he will also receive a degree from Calvin College—a Bachelor of Science in Letters and Engineering on the combined curriculum plan.

A typical program for engineers is given below. With the advice of the engineering faculty, a student may select from the electives and options indicated those courses which meet his interests and the program of the school to which he intends to transfer. The half course, Engineering 312, is also recommended.

<i>First year</i>	COURSES
Chemistry 103	1
Engineering 101	1
Engineering 102	1/2
Mathematics 111, 112	2
Physics 126	1
Interdisciplinary 100, religion and theology, or approved history	1
Economics 151	1
English 100	1
Mathematics 108	1/2
Physical education	1/2

Second year

Engineering 205	1
Engineering 202 or an engineering elective	1
Engineering 308	1
Mathematics 211, 212	2
Physics 225	1
Literature	1
Philosophy 153	1
Social science interim	1
Speech 100	½

Third year

Engineering elective	1
Technical elective, from 200 or 300 level courses in biology, chemistry, engineering, mathematics, or physics	2
Interim, engineering	1
Philosophy, 200 series course	1
Religion and Theology	1
Literature, if none in high school, or a non-technical elective	1
Fine arts elective	1
Elective	1

By special arrangements with the University of Michigan, qualified engineering students in certain fields can elect a five-year program leading to a bachelor's degree from Calvin College and a master's degree in engineering from the university. Students should discuss this option with Mr. James Bosscher.

FORESTRY

Student wishing to prepare themselves to become certified foresters can do so by enrolling in the combined-curriculum program in forestry. This program requires a student to take his first three years at Calvin College, completing a minimum of twenty-seven courses, and his final two years in the School of Natural Resources at the University of Michigan. At the end of his third year at Calvin, the student attends the University of Michigan summer camp.

After completion of the first full year's work in the School of Natural Resources at the university, the student is eligible for the Bachelor of Science in Letters and Forestry degree from Calvin College. At the conclusion of the second year at the university the student will receive the Bachelor of Science in Forestry degree from the University of Michigan, if he has met the requirements for the degree.

The science requirements for the program are: Biology 121, 122, 221, 222, 341, 346, and 352; Mathematics 111 and 112; Earth Science 251 (geology); and a two-course sequence in Chemistry and/or Physics from one of the following: Chemistry 103-104, Chemistry 113-114, Physics 221-

222, or Chemistry 113 and Physics 112. The liberal arts requirements are: one course each in history, philosophy, religion and theology with an additional course from one of the three or Interdisciplinary 100 in the interim; Economics 151 plus one additional course from economics, sociology, psychology, or political science (By the end of the fifth year a student must have completed four courses in this area with two recommended in economics); one course in American or English Literature with two additional courses in art, literature, music, speech, or foreign culture; English 100; and Speech 100 plus two semesters of basic physical education or four semesters of basic physical education.

Students wishing to consider the combined-curriculum program in forestry or forestry programs other than the combined-curriculum plan should consult Mr. Alan Gebben.

LAW

There is no structured program specifically designed for the student planning to enter a law school upon graduation. Law schools require applicants to have college degrees but do not require specific courses or majors. As the result, prospective law students should complete the requirements for a Bachelor of Arts degree as they are listed on pages 41-45. The pre-law adviser is Mr. Johan G. Westra, who can advise students on suitable electives and help them plan programs which provide good preparation for law school while, at the same time, preparing them for alternate careers in such fields as teaching, business, or social work.

MEDICINE AND DENTISTRY

All students planning to enter the premedical or predental programs should consult Mr. Henry Bengelink, faculty director of the premedical and predental programs. Students should also note the premedical entrance requirements on page 19.

The minimum requirements for these programs are Biology 121, 122, 221, and two courses from 323, which is recommended, 222, 331, or 336; Chemistry 103-104, 301-302, and one course from 201, 204, or 303; Physics 221-222 or the equivalent. Mathematics 111-112 is recommended and, ideally, should be taken before the physics course.

Most medical and dental schools give preference to students who complete a four-year college course. However, students with an exceptionally high grade point average who wish to secure a baccalaureate degree from Calvin College on the combined curriculum plan, should complete twenty-seven courses, including the program prescribed above, and as much of the core curriculum as possible. For their electives, students should choose such subjects as are required for admission to the particular medical or

dental school which they expect to attend. Upon satisfactory completion of this course and one year of successful work in a recognized medical or dental school, the student will be eligible on the combined curriculum plan for the degree of Bachelor of Science in Letters and Medicine, or Bachelor of Science in Letters and Dentistry.

It is the responsibility of the student who desires to secure a baccalaureate degree on the combined curriculum plan to notify the registrar's office by April 1 of the year in which he expects to receive the degree.

MEDICAL TECHNOLOGY

To qualify for the Bachelor of Science in Letters and Medical Technology on the combined curriculum plan a student must complete twenty-seven courses plus twelve months of successful work in an accredited school of medical technology. Students wishing to enter the medical-technology program should consult Mr. Herman Broene. The following courses are prescribed: Biology 121, 122, 221, 222, and 336; Chemistry 103, 104, 253, 254; one mathematics course from 109, 111, or 205; English 100; History 101 or 102; one course in philosophy; one course in religion and theology; one additional course from history, philosophy, religion and theology, and Interdisciplinary 100; two courses from economics, political science, psychology, and sociology; three courses from art, literature, music, speech, and foreign culture including one from English or American literature; the total of one course unit credit from the core courses in speech and basic physical education; and one foreign language through the first year college level, a requirement which may be fulfilled by two years of high school study.

A typical student program is as follows:

<i>First year</i>	COURSES
Biology 121, 122	2
Chemistry 103, 104	2
English 100	2
Foreign language (See paragraph above)	1
History 101 or 102	1
Interim	1
Physical education	1/2
 <i>Second year</i>	
Biology 221, 222	2
Chemistry 201, 204, 253, 254, 301, or 302	2
Other required courses	4
Interim	1
Physical education	1/2
 <i>Third year</i>	
Biology 336	1
Chemistry	1
Other required courses	4
Free elective	1
Interim, biology	1

Fourth year

Internship in an accredited school of medical technology.

THE MINISTRY

Calvin College, the college of the Christian Reformed Church, maintains a close relationship with Calvin Theological Seminary, the seminary of the Christian Reformed Church. Calvin Theological Seminary is a fully accredited member of the American Association of Theological Schools and is maintained primarily to provide theological education for those aspiring to the ministry in the Christian Reformed Church. The seminary stands as a representative of the historic Reformed faith, its theological standpoint being formulated in the Belgic Confession, the Heidelberg Catechism, and the Canons of Dordt.

A student seeking to qualify for admission to Calvin Theological Seminary should meet all of the regular requirements for a Bachelor of Arts or a Bachelor of Science degree as well as the specific course requirements of the seminary. To qualify for admission as a degree candidate, he should earn a grade-point average of 2.67 or higher. A student may present a concentration in either a single department or in a group of related departments, as permitted in the college curriculum, provided a minimum of seven courses is presented in a single department. Concentrations of particular relevance to theological studies are: English, Greek, history, philosophy, psychology, and sociology.

Calvin Seminary requires the following courses for admission:

	COURSES
Economics, political science, and/or sociology	2
Education and/or psychology	2
English	3
Greek	4
History	3
Latin (May be met by two years in high school)	2
Modern foreign language (See paragraph below)	0-4
Science	2
Philosophy (excluding courses in logic)	3
Religion and theology	2
Speech	2

The seminary expects that Calvin College students planning to enter the seminary will satisfy the above requirements by including the following courses in their programs: Education 301 or Psychology 332, Greek 205-206, History 301, at least two philosophy courses chosen from the Intermediate or Advanced Historical Courses, and Speech 100 and 200. Speech 203 and 240 are recommended and, in exceptional cases, either of these courses may be substituted for Speech 100.

The foreign language requirement may be met by the successful study of one foreign language through the second-year college level or by demonstrated competence at this level. Dutch is recommended as the preferred

language and German as the second choice, but other languages are acceptable.

Students desiring counsel should consult their departmental adviser; or Mr. Richard De Ridder, the seminary registrar.

NURSING

Students desiring counsel should consult their departmental adviser a two and a half year program leading to a nursing diploma without a college degree. (Calvin and Blodgett Hospital provide this option.) They may also follow a four-year program leading to a Bachelor of Science in Nursing degree. (Calvin has a cooperative arrangement with Grand Valley State Colleges to provide this option.) One or two years of such programs typically may be completed at Calvin. Students interested in any of these programs should work out their programs with the nursing adviser, Miss Beverly Klooster.

The diploma program with Blodgett Memorial Hospital School of Nursing requires thirty months, the first nine months of which involve courses in both the college and the school of nursing. The first semester courses at the college are Biology 105 and 107, English 100 or, if not required, some other course in English; and Psychology 151 with Basic Nursing I taught at the school of nursing. During the second semester students take Biology 106, Sociology 151, and Speech 100 at the college and Chemistry 101, Basic Nursing II and Nutrition at the school of nursing.

Upon successful completion of this program, the student is awarded a diploma in nursing by Blodgett Memorial Hospital School of Nursing and is eligible to write the examinations given by a state board of nursing. After passing these examinations a person is licensed to practice as a registered nurse.

Persons wishing to take this diploma nursing program must make application with both the director of the Blodgett Memorial Hospital School of Nursing and with the admissions office of Calvin College. Application should be made during the last part of the junior year of high school or early in the senior year. No application will be processed until *all* required forms and test scores are available to the director of the school of nursing (See page 22). Admission to this nursing program is determined by the admission committee of the school of nursing.

A Bachelor of Science in Nursing degree may be begun at Calvin, but must be completed at another college or university which offers the Bachelor of Science in Nursing degree. Many state colleges and universities offer such programs which typically are divided into two parts; first, a one to two year pre-nursing curriculum which may be completed at any approved college, and, second, a two to three year clinical or professional

nursing curriculum which must be completed at the school which grants the degree.

Most of Calvin's pre-nursing students complete their degree requirements at Grand Valley State Colleges (a state-supported college about twenty minutes drive from Grand Rapids), but others have transferred to other schools of nursing such as Cornell or Columbia in New York City, University of Illinois, University of Michigan, Northern Michigan University, and Eastern Michigan University.

Because the courses required vary from school to school, students are advised to select the school from which they wish to earn this degree prior to enrolling in courses at Calvin to permit them to complete the proper pre-nursing sequence. Students who do not wish to prepare to transfer to Grand Valley State Colleges are encouraged to communicate with schools in their home states which give a degree in nursing, prior to enrolling at Calvin, to insure that they will be taking the proper courses to fulfill course requirements for transfer into one of these programs.

Students preparing for transfer to the nursing program at Grand Valley State Colleges take the following: four designated courses in biology including anatomy and physiology, microbiology, and genetics, three to four courses in chemistry including inorganic, organic, and biochemistry, Physics 223, Psychology 151, English 100 plus a literature course, a course in sociology, one in developmental psychology, and a fine arts course. Students who have not taken four years of high school mathematics should complete Mathematics 101-102, 109, or another appropriate course.

Other schools in Michigan which offer a Bachelor of Science in Nursing degree are Andrews University, Madonna College, Nazareth College, Mercy College, Michigan State University, and Wayne State University.

NATURAL RESOURCES

Calvin College, in cooperation with the University of Michigan, provides a five-year program leading to a Bachelor of Science in Letters and Natural Resources. Three years are spent at Calvin and two at the university. At present there is no professional degree in this field. The adviser for all programs in natural resources is Mr. A. Bratt.

The basic courses required are: Biology 121, 122, 221, 222, 313 or 352, 341, 346, and Earth Science 251. Cognate courses typically include Chemistry 103-104; Physics 221-222 or Physics 112 and Chemistry 113; and Mathematics 111-112. Because there are different concentrations possible within the field of natural resources, individual programs must be worked out with the adviser. The liberal arts core requirements are the same as those specified for forestry.

A two-year program preparing for transfer to the wildlife management program at the university is also possible. Such students should complete:

Biology 121, 222, 221, 222, and 321; **Mathematics** 111-112; and as many of the core requirements as possible. The university requires twelve semester hours in the humanities and twelve in the social sciences.

Other schools require similar preparation for transfer students. Employment opportunities are limited in the field of natural resources, however, for persons holding only a bachelor's degree. It is advisable to complete additional training at the graduate level. Persons interested in research or management positions are advised to complete a regular four-year program at Calvin, majoring in biology, then specializing in natural resources at the graduate level.

OTHER PROFESSIONAL PROGRAMS

Students interested in preparing for any profession should see the registrar of the college. Curricula can be arranged to enable such students to remain at Calvin for one or two years.



Courses

Description of courses offered in departments and programs

The symbols F (Fall), I (Interim), and S (Spring) indicate when each course is offered. The term *core* designates those courses in each department which meet the general graduation or core requirements of the discipline. The few courses which carry more or less than a single course credit are indicated; all others carry a single course credit. Courses regularly offering honor sections are indicated; honor registration in any course is possible subject to the approval of the instructor. Interim courses numbered 1-19 and 101-199 are open to any student; those numbered 20-29 and 200-299 are open to sophomores and juniors; and those numbered 30-39 and 300-399 are open to juniors and seniors.

Faculty members on leave of absence for the 1975-76 academic year are indicated by an asterisk (*), those on leave for the first semester by a dagger (†), and those on leave the second semester by double asteriks (**).

Interdisciplinary

100 CHRISTIAN PERSPECTIVES ON LEARNING. I. An introductory study of the relationship between Christian faith and learning. Beginning with a consideration of some contemporary alternatives and challenges to Christianity, the course proceeds to an examination of current statements of the nature of Christian faith and discipleship. The course culminates in an examination of how different views of Christian faith and its relation to culture produce different kinds of secular and Christian colleges. The ground is thus laid for a critical examination of one's academic experience at Calvin College. Taught by a committee representing the several disciplines and open to freshmen and sophomores. Mr. G. Besselsen, Mr. P. De Jong, Mr. R. De Vries, Mr. G. Harper, Mr. D. Jellema, Mr. B. Kreuzer, Mr. G. Meulenburg, Mr. D. Nykamp (chairman),

Mr. K. Piers, Mr. C. Vos, and Mr. G. Weaver.

234 THE CONTEMPORARY AMERICAN RELIGIOUS SITUATION. S. A description and analysis of current American religious developments in historical, sociological, and theological perspective. Institutional and non-institutional developments, within and outside of the Judeo-Christian tradition, will be examined. Satisfies as a *third* core course in Religion and Theology. Mr. J. Primus and Mr. W. Smit.

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 101 INTRODUCTION TO PHOTOGRAPHY, Mr. J. Korf, Mr. H. Van Till.
102 ENVIRONMENTAL SCIENCE, Mr. A. Bratt.

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| 103 | VISUAL HUMOR, <i>Mr. G. De Blaey, Mr. R. Jensen.</i> | | ROLE OF RELIGION IN PUBLIC EDUCATION, <i>Mr. H. Hoeks.</i> |
| 104 | HUMAN NUTRITION AND HEALTH, <i>Miss B. Klooster.</i> | 115 | VALUE EDUCATION, <i>Mr. D. Holquist.</i> |
| 105 | MUSIC IN RECREATION AND LEISURE, <i>Mrs. D. Hageman, Miss G. Huisman.</i> | 116 | INTRODUCTION TO BILINGUAL EDUCATION, <i>Mrs. E. Greenway.</i> |
| 106 | MUSICAL THEATER, <i>Mrs. E. Boevé, Mr. J. Worst.</i> | 118 | JOURNALISM WORKSHOP, <i>Mr. P. Oppewall, Mr. T. Ozinga.</i> |
| 107 | CLASSICAL MYTHOLOGY, <i>Mr. R. Otten.</i> | 119 | SAINTS OR SINNERS: THE CHRISTIAN'S SELF-IMAGE, <i>Mr. L. Tietsma, Mr. L. Vos.</i> |
| 108 | CHRISTIAN RESPONSES TO CONTEMPORARY PROBLEMS, <i>Mr. V. Ehlers.</i> | 123 | NOISE AND MAN, <i>Mr. H. Geerdes, Mr. M. Vande Guchte.</i> |
| 109 | DANTE: A STUDY OF THE DIVINE COMEDY, <i>Mr. H. Rienstra.</i> | 300 | CHRISTIAN PERSPECTIVES ON THE STUDY OF MAN, <i>Mr. W. De Boer and Staff.</i> |
| 110 | INTERDISCIPLINARY PROBLEM SOLVING, <i>Mr. J. Bosscher and Staff.</i> | 301 | WORLDS IN COLLISION - IDEAS IN CONFLICT, <i>Mr. C. Menninga.</i> |
| 111 | THE COLLEGE EXPERIENCE, <i>Mr. W. Joosse.</i> | 302 | THE THOUGHT OF JACQUES ELUL, <i>Mr. P. Henry</i> |
| 112 | SEMINAR IN ENERGY SOURCES, <i>Mr. A. Kromminga.</i> | 303 | MAHAYANA BUDDHISM, <i>Mr. L. Sweetman.</i> |
| 114 | MAY GOD GO TO SCHOOL? THE | 304 | THEOLOGY OF THE CITY, <i>Mr. G. Spykman.</i> |

Art

Associate Professors E. Boevé (chairman), R. Jensen, C. Overvoorde.
Assistant Professors H. Bonzelaar, C. Huisman, N. Matheis.

THE ART PROGRAM at Calvin has been conceived within the framework of the liberal arts tradition. The department also offers a program for those who wish to teach art in the elementary and secondary schools. Students intending to major in the field must secure a minimum grade of C (2.0) in 207. The minimum major program is 207, 208, 209, 210, 231, 232, 320, 325, one course from 326, 310, or 311 and either 332 or 340. During the spring semester of their senior year all art majors will be required to present an art exhibition on campus. The major program for elementary and secondary education is: 207, 208, 209, 215, 216, 231, 232, 310 or 311, and 320 or 325; the minor concentration is: 207, 208, 209, 216, 231, and 232. Advisers for these programs are Mr. Boevé, Mrs. Bonzelaar, and Mr. Jensen.

The Bachelor of Fine Arts (B.F.A.) program, with a greater professional emphasis, is fully described on page 45.

The core requirements in the fine arts may be met by 151, 215 (elementary education students), 231, 232, 332, or 340. Art 231 and 232 may be part of the teaching minor in the academic study of religions.

151 **INTRODUCTION TO ART.** F and S, core. Lecture and participation in the basic elements and principles of art. Emphasis placed upon the student's involvement and response to materials and ideas. Not ordinarily a part of major or minor program. *Staff.*

207 **TWO DIMENSIONAL DESIGN.** F and S. Discovery of design through the use of the basic art elements: line, color, shape, texture, space, value. *Staff.*

208 **THREE-DIMENSIONAL DESIGN.** F and S. Construction, carving, and modeling in various materials will be pursued in relation to problems in space, movement, balance, rhythm, and integration of the total form. Prerequisite: 207. *Staff.*

209 **DRAWING I.** F and S. Various media are used to explore the possibilities and problems in drawing from a creative point of view. Famous artists of the past and present will be studied to acquaint the student with a variety of approaches to the medium. Prerequisites: 207, 208. *Mr. R. Jensen, Mr. N. Matheis.*

210 **DRAWING II.** S. Continuation of Drawing I with emphasis on more personal expression. Prerequisites: 207, 208, 209. *Mr. C. Huisman, Mr. N. Matheis.*

215 **PRINCIPLES OF ART EDUCATION.** F and S, core. A course emphasizing methods and techniques of organizing and motivating art instruction on the elementary school level. It includes lectures, demonstrations, and art teaching experiences in the school situation. Research paper required. Recommended for elementary teacher training programs. *Mr. E. Boevé, Mrs. H. Bonzelaar, Mr. J. Jensen.*

216 **PRINCIPLES OF ART EDUCATION.** S, core. A course emphasizing methods and techniques of organizing and motivating art on the secondary school level. Media explored will emphasize clay, enameling, jewelry-making, weaving, batik, printmaking, and painting. Prerequisites: 207, 208, 209. *Mr. R. Jensen.*

231 **AN INTRODUCTION TO THE HISTORY OF THE FINE ARTS.** F, core. A

survey of the history of architecture, painting, and sculpture in Ancient, Medieval, and Renaissance times. A study of the character of ancient art from Egypt through Rome is followed by a study of medieval art from its beginning in the early days of the Christian era to its climax in the Gothic period of the thirteenth century. *Mr. E. Boevé.*

232 **AN INTRODUCTION TO THE HISTORY OF THE FINE ARTS.** S, core. Continuation of 231. The study of painting from 1500 to the present. *Mr. E. Boevé.*

310 **SCULPTURE.** S. Exploration of traditional and contemporary sculpture material. Application of their use and control for personal expression. Prerequisites: 207, 208, 209, 210. *Mr. R. Jensen.*

311 **CERAMICS.** F and S. Creation and study of ceramic forms. Exploration of the expressive and functional possibilities of the media. History of ceramics from the pre-Columbian times to the present. Prerequisites: 207, 208, 209, 210. *Mr. C. Huisman.*

312 **SCULPTURE II.** Continued exploration of materials and techniques discovered in 310, with the opportunity for an in-depth study of such areas as carving, casting, construction, and modeling. Prerequisite: 310. *Mr. R. Jensen.*

313 **CERAMICS II.** Continued exploration of the chemical composition of clay bodies, glazes, and stains. Prerequisite: 311. *Mr. C. Huisman.*

320 **PRINTMAKING.** F and S. An introduction to the four basic printmaking media—relief, intaglio, serigraphy, and planography—through slide presentations, lectures, readings, and demonstrations. Each student will explore in depth one or two of the basic media in the print studio. Prerequisites: 207, 208, 209, 210. *Mr. C. Overvoorde.*

321 **PRINTMAKING II.** Continued development of the visual ideas and the techniques of relief, intaglio, serigraphy, and planography. Continuation of work in intaglio can lead to exploring various sub-techniques—aquatint, hard ground, soft ground, engraving, mezzotint, and

drypoint. Other options are also open. Prerequisite: 320. *Mr. C. Overvoorde.*

325 PAINTING I. F. and S. A study of the tradition in painting, emphasizing techniques and methods of communicating ideas visually. Studio work will give opportunity to experiment in various techniques and subjects. Prerequisites: 207, 208, 209, 210. *Mr. N. Matheis, Mr. C. Overvoorde.*

326 PAINTING II. F and S. Continuation of 325. Prerequisites: 207, 208, 209, 325. *Mr. N. Matheis, Mr. C. Overvoorde.*

327 PAINTING III. A study of painting techniques not studied in 326 and of methods such as tempera, fresco, varnish, for communicating ideas visually. Studio work provides opportunity for developing a more personal expression than is available in 325 and 326. Prerequisite: 326. *Staff.*

332 HISTORY OF DUTCH PAINTING. F, core. A historical survey of Dutch painting from the Gothic to modern times. Emphasis on the images created and the ideas expressed by the major painters such as Van Eyck, Bosch, Brueghel, Rubens, Rembrandt, Van Gogh, and Mondrian. *Mr. C. Overvoorde.*

340 CONTEMPORARY PAINTING AND ARCHITECTURE. S, core. A study of painting from Impressionism to the present with emphasis on Expressionism, Abstractionism, Non-objectivism, and Abstract Expressionism. Architecture is studied in relation to programming, technology, materials, and site, beginning with Sullivan, Eiffel, and Gaudy and continuing

into the twentieth century with Wright, Le Corbusier, Mies vander Rohe, and Saarinen. Outside reading and papers will be required. *Mr. E. Boevé.*

390 INDEPENDENT STUDY. F, I, S. A student wishing to register for the interim must submit a project to the chairman for his approval.

395 SEMINAR AND EXHIBITION. An opportunity from a Christian perspective to integrate the study of art history, aesthetics, and the other liberal arts as well as the work in studio art. The seminar will include regular meetings with the faculty, the writing of a scholarly statement of the candidate's philosophy of art, a study of exhibitions in art galleries and museums, and the presentation of a one-man show. Prerequisite: senior status and a concentration in art. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 THE VISIBLE SPECTRUM: COLOR, *Mr. N. Matheis.*

30 GRAPHIC ARTS: PROBLEMS IN DESIGN AND REPRODUCTION, *Mr. C. Overvoorde.*

31 METALS FOR CONTEMPORARY CRAFTSMEN, *Mrs. H. Bonzelaar.*

32 DESIGN FROM NATURE, *Mr. C. Huisman.*

33 WELDED METAL SCULPTURE, *Mr. S. Vander Werf.*

390 INDEPENDENT STUDY, *Staff.*

The following interdisciplinary course is also offered by a member of this department.

103 VISUAL HUMOR, *Mr. G. De Blaey, Mr. R. Jensen.*

Astronomy

Professors V. Ehlers (chairman, Department of Physics), H. Van Til

STUDENTS INTERESTED in graduate work in astronomy should major in physics and should plan their program with the chairman of the Physics Department. The sixteen-inch telescope in the observatory and portable

telescopes are available for student use through the director of the observatory, Mr. Van Till.

110 PLANETS, STARS, AND GALAXIES. F and S, physical science core. A survey of the major astronomical objects, such as planets, stars, and galaxies; a study of their characteristics and their organization into a dynamic, structured universe; an investigation of the processes now occurring in the universe and the methods used to study them. The course includes a presentation of the evidence of the

history and development of the universe, a description of cosmological models, and a discussion of possible Christian responses to them, Mr. H. Van Till.

390 INDEPENDENT STUDY. F, I, S, half or full course. Independent readings and research in astronomy. Prerequisite: permission of the chairman. Mr. H. Van Till.

Biology

Professors A. Bratt (chairman), A. Gebben, B. Ten Broek, *G. Van Harn
Associate Professors J. Beebe, B. Klooster, P. Tigchelaar
Assistant Professor H. Bengelink
Instructor R. Van Dragt

VARIOUS PROGRAMS of concentration in biology prepare a student for graduate study, for high school teaching, and for professional training in medicine and related fields. To be admitted to a concentration in biology a student must have a minimum average of C (2.0) in 121 and 122 or in an equivalent program approved by the department.

The major program requires 121, 122, 221, 222; at least one investigative course; two additional 300-level courses; and 395, Biological Perspectives. Required cognates include either Mathematics 111-112 or Mathematics 205-206 or a year of college physics, and the completion of a second year of college chemistry. Students who have previously been admitted to a major in the department may satisfy the requirements designated in earlier catalogs.

The secondary school teaching major is essentially the same except that an additional 300-level course is required. The required cognates constitute a minor in the physical sciences. Prior to the internship semester, a student must successfully complete a screening test administered by the department. The elementary teacher education adviser is Mr. Clarence Menninga.

The core requirement in biology may be met by a year of Advanced Biology in high school, by both Biology 105 and 106, or by any other course in biology.

NURSING PROGRAM COURSES

105 INTRODUCTORY HUMAN ANATOMY AND PHYSIOLOGY. F. An introduction to

the study of human biology, including elements of anatomy, histology, and physiology. Mr. P. Tigchelaar.

106 INTRODUCTORY HUMAN ANATOMY AND PHYSIOLOGY. S. Continuation of 105. *Mr. P. Tigchelaar.*

107 INTRODUCTORY MICROBIOLOGY. F. An introduction to the principles and techniques of microbiology, with emphasis on the bacteria. *Miss B. Klooster.*

GENERAL COLLEGE COURSES

111 BIOLOGICAL SCIENCE. F. and S. An introduction to the principles and concepts of biology and the history and philosophy of biological thought for the general college student. Prerequisites: none, but Mathematics 109 and Physics 110 recommended. *Staff.*

115 HUMAN BIOLOGY. F and S. A study of the normal biological structure and function of man. *Staff.*

116 FIELD BIOLOGY. F. An introduction to the study of the common plants and animals in their natural environment. The course will provide acquaintance with general concepts and methods used in field biology and will give experience in the identification of plants and animals and their inter-relationships. *Mr. H. Bengelink.*

PROGRAM OF CONCENTRATION COURSES

Basic Courses

121 CELL BIOLOGY. F. A study of cellular, subcellular, and molecular structure and function. Cell theory is developed as a basis for study in other areas. *Staff.*

122 ORGANISM BIOLOGY. S. An introduction to the anatomy and physiology of plants and animals. Emphasis is on seed plants and vertebrate animals. Prerequisite: Biology 121. *Staff.*

221 GENETICS AND DEVELOPMENT. F. A study of the development of contemporary concepts of the gene and an introduction to the study of biological development, including both embryonic and post-embryonic systems. Prerequisites: Biology 121 and 122. *Staff.*

222 ECOLOGY AND EVOLUTION. S. An introduction to the study of biological populations and communities and contemporary concepts of organic evolution.

Prerequisites: Biology 121, 122, 221. *Staff.*

INVESTIGATIVE COURSES

Prerequisites for all investigative courses include Biology 121, 122, 221, and 222.

350 INVESTIGATIONS IN THE DIVERSITY OF ORGANISMS. F. A systematic study of the classifications, morphological patterns, adaptations, and evolution of plants and animals. *Mr. A. Bratt and Mr. A. Gebben.* Not offered 1975-76.

351 INVESTIGATIONS IN GENETICS AND DEVELOPMENT. S. Laboratory studies of genetic and developmental phenomena of selected organisms. *Mr. J. Beebe and Mr. B. Ten Broek.* Not offered 1975-76.

352 INVESTIGATIONS IN ECOLOGY. F. Laboratory and field studies of biological populations and communities. *Mr. A. Gebben.* Not offered 1975-76.

ADVANCED COURSES

Prerequisites for all advanced courses include Biology 121, 122, 221, 222, or their equivalent.

313 GENERAL ECOLOGY. F. An introduction to the study of biological populations and communities, including discussions of biogeographic regions, the ecosystem concept, and interactions of organisms with the biotic and abiotic environment. *Mr. A. Gebben.*

323 COMPARISON VERTEBRATE ANATOMY. S. A study of the comparative anatomy of vertebrates. Three hours of lecture and one laboratory session per week. *Mr. H. Bengelink.*

331 COMPARATIVE ANIMAL PHYSIOLOGY. S. A comparative study of basic functional mechanisms of animals. Additional prerequisites: Chemistry 254 or equivalent. *Staff.*

332 PLANT PHYSIOLOGY. S. A study of plant function. Course topics include photosynthesis, photomorphogenesis, plant hormones, and the movement of water and solutes. Additional prerequisite: Chemistry 254 or equivalent. *Mr. J. Beebe.*

336 **GENERAL MICROBIOLOGY.** S. A study of the structure and function of micro-organisms with emphasis on the bacteria. Additional prerequisite: Chemistry 254 or equivalent. *Miss B. Klooster.*

341 **ENTOMOLOGY.** F. Study of the biology of insects, with emphasis on systematics. *Mr. A. Bratt.*

346 **PLANT TAXONOMY.** S. Identification, nomenclature, and classification of vascular plants. Lectures, laboratories, and field trips, including some Saturdays. *Mr. A. Gebben.*

SEMINAR AND RESEARCH COURSES

390 **INDEPENDENT STUDY.** F, I. S. Prerequisite: Approval of department.

395 **BIOLOGICAL PERSPECTIVES.** F, S. A study of the history of biology and its major ideas and concepts; a study of the biological literature; and a critical analysis of various philosophies of science. Prerequisite: senior status in biology program of concentration. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 **PLANT PROPAGATION,** *Mr. J. Beebe, Mr. A. Gebben.*

12 **MEDICINE FOR THE LAYPERSON,** *Mr. P. Tigchelaar.*

20 **MAMMALIAN STRUCTURE: GROSS AND MICROSCOPIC,** *Mr. H. Bengelink.*

21 **LABORATORY EXPERIENCES IN BIOLOGY,** *Mr. B. Ten Broek.*

22 **INTRODUCTION TO VERTEBRATE ETHOLOGY,** *Mr. R. Van Dragt.*

30 **SUPERVISION OF LABORATORY WORK IN BIOLOGY,** *Mr. B. Ten Broek.*

390 **INDEPENDENT STUDY IN BIOLOGY,** *Mr. B. Ten Broek.*

The following interdisciplinary interim courses are also offered by members of this department.

102 **ENVIRONMENTAL SCIENCE,** *Mr. A. Bratt.*

104 **HUMAN NUTRITION AND HEALTH,** *Miss B. Klooster.*

Chemistry

*Professors H. Broene, T. Dirkse, W. Van Doorne, E. Wolthuis (chairman)
Associate Professors R. Albers, K. Piers*

PREREQUISITE TO BEING admitted to a concentration in chemistry is a minimum average of C (2.0) in 103, 104, and 201.

For students who do not plan to pursue graduate study in chemistry, additional courses required are: 277-278 and either 253-254 or 301-302. Required cognates are Mathematics 111-112 and a year of college physics.

For students preparing for graduate study in chemistry, the certification requirements of the American Chemical Society for professional training in chemistry may be met by completing the eleven courses: 103-104, 201, 277-278, 301-302, 305, 309, 310, and 303 or at least one approved chemistry interim course; Mathematics 111-112, 211-212; Physics 126, 225, 226 or 123, 124, 225. A reading knowledge of German is required and of French is recommended.

The nine-course chemistry major for teacher education students includes 103-104, 201, 204 or 277, 253-254 or 301-302, two courses in physics other than 110 or 112, and one chemistry course chosen from 278, 303, 305,

309, 310, or an approved interim course. The teaching minor is 103-104, 204, 253-254 or 301-302, and either an elective or an approved interim course.

The teaching group major in chemistry and physics consists of Chemistry 103-104 and 253-254 or 301-302; Physics 123, 124, 225, and 226; and two and a half courses in chemistry and/or physics which are approved by the Science Division Education Coordinator. Recommended courses include: Chemistry 201, 277, 278, Physics 381, and 382.

The Science Division Education Coordinator and Elementary Education Adviser is Mr. Clarence Menninga of the Physics Department.

101 CHEMISTRY FOR NURSES. S. A one-semester survey of inorganic, organic, and biological chemistry as applied in the field of medicine. Open only to students in the Blodgett Hospital nursing program. *Mr. T. Dirkse.*

103 GENERAL CHEMISTRY. F. A study of the basic principles of chemistry, with emphasis on the laws of chemical combination, theories of atomic structure and chemical bonding, the periodic law, kinetic theory, and chemical and physical equilibria. Laboratory. A high school chemistry course is strongly recommended. *Staff.*

104 GENERAL CHEMISTRY. S, core. A continuation of 103, with emphasis on acid-base theory, reaction rates, ionic equilibria, redox reactions, electrochemistry, and nuclear chemistry. The laboratory work involves the systematic separation and identification of cations and anions. Laboratory. Prerequisite: 103. *Staff.*

113 FUNDAMENTALS OF CHEMISTRY. F. This course is intended for elementary education students and for those who need only one course in general chemistry to satisfy various paramedical professional requirements. The fundamental concepts of chemical science are presented together with selected topics in descriptive chemistry. Emphasis is placed on the language of chemistry, the mole concept, chemical bonding, stoichiometry equilibrium processes, and periodicity. Laboratory. *Mr. W. Van Doorne.*

114 INTRODUCTION TO ORGANIC AND BIOCHEMISTRY. S. A study of the fundamental classes of organic compounds,

their syntheses and reactions, followed by a survey of compounds and chemical changes occurring in living systems, of photosynthesis, metabolism, respiration, etc. Laboratory. Prerequisite: 113. *Mr. R. Albers.*

201 QUANTITATIVE ANALYSIS. F. A study of the theory and practice of titrimetric and gravimetric methods of analysis. Laboratory. Prerequisite: 104. *Mr. T. Dirkse.*

204 INTRODUCTORY THEORETICAL CHEMISTRY. S. A study of the states of matter, properties of solutions, thermodynamics, chemical kinetics, and the colloidal state. This course treats some of the topics also covered in Chemistry 277-278, but is designed for students who have not had Mathematics 111-112. Prerequisite: 104. *Mr. H. Broene.*

253 ORGANO-BIOCHEMISTRY. F. A study of organic compounds, reactions, and reaction mechanisms, emphasizing their biochemical significance. Laboratory. Prerequisite: 104. *Mr. E. Wolthuis.*

254 ORGANO-BIOCHEMISTRY. S. A continuation of 253, concluding with a study of the chemistry of metabolism and the application of quantitative methods to biochemical analyses. Laboratory. Prerequisite: 253. *Mr. E. Wolthuis.*

277 PHYSICAL CHEMISTRY. F. A study of the kinetic theory as applied to gases, liquids, and solids; introduction to thermodynamics. Prerequisite: 201, Mathematics 112, and a high school or college physics course. *Mr. H. Broene.*

278 PHYSICAL CHEMISTRY. S. A continuation of 277, with a study of electro-

chemistry, chemical thermodynamics, and kinetics. Laboratory. Prerequisite: 277. *Mr. T. Dirkse.*

301 ORGANIC CHEMISTRY. F. A detailed study of organic compounds, their synthesis and reactions, presented within the framework of modern physico-chemical theory, together with an introduction to modern methods of analysis and identification. Laboratory. Prerequisite: 104, and preferably 201. *Mr. K. Piers.*

302 ORGANIC CHEMISTRY. S. A continuation of 301. Laboratory. Prerequisite: 301. *Mr. K. Piers.*

303 BIOCHEMISTRY. F. A study of proteins, carbohydrates, lipids, enzymes, co-enzymes, hormones, vitamins, metabolism, biosynthesis, and bioenergetics. Laboratory. Prerequisite: 254 or 302. *Mr. R. Albers.*

305 ORGANIC SYNTHESIS AND ANALYSIS. F. Lectures consist of a study of selected topics in advanced organic chemistry. Laboratory work consists of literature searches on assigned multi-step syntheses, followed by the preparation of the required compounds, and chemical and instrumental analyses at various stages of the syntheses. Prerequisite: 302. *Mr. K. Piers.*

309 ADVANCED QUANTITATIVE ANALYSIS. S. A study of optical, electrometric, chromatographic, and radiochemical methods of analysis, with emphasis on their theoretical bases. Laboratory. Prerequisites: 201, 277. *Mr. T. Dirkse.*

310 ADVANCED INORGANIC CHEMISTRY. S. A study of the chemical elements from the standpoint of periodicity and the nature of chemical bonding. Crystal field theory and ligand field theory are discussed in connection with the chemistry of the transition elements. Laboratory. Prerequisite: 278. *Mr. W. Van Doorne.*

390 SENIOR RESEARCH. S. Library and laboratory research on an assigned problem. Open only to approved seniors majoring in chemistry. *Staff.*

395. SEMINAR. F and S. Meets one hour per week for discussion of selected topics. The program features visiting speakers, student reports on projects and senior research, staff presentations of their research, and discussion of topics of general interest. All juniors and seniors in the chemistry program are advised to participate. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 10 CHEMISTRY OF THE ELEMENTS. *Mr. T. Dirkse.*
- 11 COLORFUL CHEMISTRY, *Mr. E. Wolthuis.*
- 12 INTRODUCTORY RADIOCHEMISTRY, *Mr. R. Griffioen.*
- 13 WATER: THE STUFF YOU DRINK IS A "CHEMICAL", *Mr. H. Broene.*
- 20 CLINICAL BIOCHEMISTRY, *Mr. R. Albers.*
- 390 INDEPENDENT STUDY, *Staff.*

Classical languages

Professors G. Harris, R. Otten, R. Wevers (chairman)
Assistant Professor E. Van Vugt

THE DEPARTMENT OFFERS THREE programs of concentration: Classics, Greek, and Latin. The Classics program is designed for graduate studies, the Greek for pre-seminarians, the Latin for those intending to teach the language at the secondary school level. Modified concentrations are available to other students.

The Classics program requires fourteen courses and one interim, including six elementary or intermediate courses chosen from: Latin 201-202,

Greek 101-102, 201-202, 203-204; six intermediate or advanced courses selected from: Latin 205-206, 301-302, 303-304; Greek 201-202, 203-204, 301, 302; and two courses in ancient history (Greek 311 and Latin 312, or History 301 and an interim). Reading competence in French and German is strongly recommended.

The Greek program requires eight courses selected from: Greek 101-102, 201-202, 203-204, 205, 206, 301, 302, 311, Latin 312, and History 301. The recommended program for pre-seminarians is the following: Greek 101-102, 201-202 or 203-204, 206, History 301, and a 300-level Greek course.

The recommended Latin program, which prepares for a secondary teaching certificate, includes 101-102, 201-202, 205-206, 301-302, 303-304, 312, and two approved interims, one of which should be in either classical mythology or classical literature in translation. The specific nine-course program depends on the student's high school preparation. The teacher education adviser is Mr. Van Vugt.

A Latin teaching minor requires five courses beyond the 100 level and an approved interim.

Students who have completed one year of high school Latin should enroll in Latin 101; two years in 201; three years, in either 202 or 205; more than three years, in 205 or 206. Those who have completed one year of college Latin should enroll in 201.

The core requirements in the fine arts may be met by Greek 202, 204, 301, 302, any Latin course numbered 202 through 304, and designated interims. Interdisciplinary 107, Classical Mythology, may be part of the teaching minor in the Academic Study of Religions.

GREEK

101 ELEMENTARY GREEK. F. Text: Crosby and Schaeffer, *An Introduction to Greek*. Mr. G. Harris, Mr. R. Wevers.

102 ELEMENTARY GREEK. S. Continuation of 101. Completion of the text and the reading of the first book of Xenophon's *Anabasis* or its equivalent. Mr. G. Harris, Mr. R. Wevers.

201 INTERMEDIATE GREEK A. F. Readings in the early dialogues of Plato. Special emphasis is put on gaining reading proficiency in Greek prose. Prerequisite: 102. Mr. R. Otten.

202 INTERMEDIATE GREEK A. S, core. Readings in Homer's *Iliad*. Attention is given to the characteristics of Homer's

world. Prerequisite: 201 or 203. Mr. R. Otten.

203 INTERMEDIATE GREEK B. F. Readings in Herodotus. Special emphasis is put on gaining reading proficiency in Greek prose, with some attention to the characteristics of Herodotus as historian in relation to Thucydides. Prerequisite: 102. Not offered 1975-76.

204 INTERMEDIATE GREEK B. S, core. Readings in the Attic orators and Plato's *Apology*. Attention is given to certain matters of style. The readings are viewed in relation to, and as documentation for, the history of fourth-century Athens. Prerequisite: 203 or 201. Not offered 1975-76.

205 NEW TESTAMENT GREEK: THE

GOSPELS. F. The Gospel according to St. Mark is read with some notice of the parallel passages in the other Gospels. A study is made of the special features of Hellenistic Greek. The significance of lexical and syntactical detail for the interpretation of the text is everywhere emphasized. Prerequisite: 102. *Mr. R. Wevers and Staff.*

206 NEW TESTAMENT GREEK: THE EPISTLES. S. A study is made of some of the Pauline Epistles. Prerequisite: 205. *Mr. R. Wevers and Staff.*

301 PLATO'S REPUBLIC. F, core. The Greek text is studied. This course aims at an understanding and evaluation of Plato's views as presented especially in the *Republic*. Prerequisite: Four courses in Greek. *Mr. G. Harris.*

302 GREEK DRAMA. S, core. A reading of selected Greek tragedies with attention given to their poetic and dramatic qualities. Those matters of Greek culture, literary tradition, and history which help to understand the plays are noted. Assigned outside reading in other Greek plays. Prerequisite: 301. *Mr. G. Harris.*

311 GREEK HISTORY. F. The political, social, and cultural history of the Greek city-status up to the time of the Roman conquest. Some attention is also given to the history of the Near and Middle East. Not offered 1975-76.

LATIN

101 ELEMENTARY LATIN. F. For students who have had only one unit of high school Latin or who have had no Latin. Emphasis is placed on the essentials of grammar and a basic vocabulary with constant comparison to English. *Sententiae* from the principal Latin authors will be read. *Mr. R. Otten.*

102 ELEMENTARY LATIN. S. A continuation of 101. Emphasis is placed on grammar and the early reading of longer selections of authentic Latin dealing with Roman history and culture. Prerequisite: 101 or its equivalent. *Mr. R. Otten.*

201 INTERMEDIATE LATIN. F. A thorough review of the essentials of grammar will accompany the reading of selected

Latin prose. Prerequisite: two units of high school Latin or two courses of college Latin. *Staff.*

202 INTERMEDIATE LATIN: VERGIL AND THE ANCIENT EPIC. S, core, honor sections. A study of the *Aeneid* and the ancient epic in translation. Selected books in the *Aeneid* will be read in Latin with a study of the prosody of Vergil. Prerequisite: three units of high school Latin or three courses of college Latin. *Staff.*

205 READINGS IN LATIN LITERATURE. F, core. Intensive reading in the major writers of prose from the Late Republic to the Early Empire. Collateral readings in the literary history of the period. Prerequisite: 202. *Mr. R. Otten.*

206 READINGS IN LATIN LITERATURE. S, core. Intensive reading in the major writers of poetry from the Late Republic to the Early Empire. Collateral readings in the literary history of the period. Prerequisite: 202. *Mr. R. Otten.*

301 LATIN PHILOSOPHICAL LITERATURE: LUCRETIVUS AND SENECA. F, core. Selections from Lucretius and Seneca, designed to portray some of the major ethical and political issues raised in Roman thought. Collateral reading and reports. Prerequisite: 205 or 206. Alternates with 303. *Mr. R. Otten.*

302 LATIN PHILOSOPHICAL LITERATURE: CICERO AND AUGUSTINE. S, core. Readings in Cicero and Augustine, selected to complete the survey begun in 301 and to present the first major Christian critique of classical thought. Collateral readings and reports. Prerequisite: 205 or 206. Alternates with 304. *Mr. R. Otten.*

303 LATIN LYRIC POETRY. F, core. A study of Latin lyric poetry from Catullus through the elegiac poets, with some attention to early Christian and medieval poetry. Collateral reading and reports. Prerequisite: Latin 205 or 206. Alternates with Latin 301. Not offered 1975-76.

304 TACITUS AND PLINY. S, core. Readings in the historical works of Ta-

citius and the correspondence of Pliny as sources and commentary on the political issues and movements of the Early Empire. Collateral reading and reports. Prerequisite: Latin 205 or 206. Alternates with Latin 302. Not offered 1975-76.

312 ROMAN HISTORY. S. The history of Rome from the foundation of the city to A.D. 565, the death of Justinian. The emphasis falls on the development of the constitution and its effect upon, and how in turn it was affected by, the expansion of Rome over the Mediterranean. Economic, social, and literary history studied in their relation to the political. The decline of paganism and the

rise of Christianity are viewed in their relation to each other. Prerequisite: Greek 311. Not offered 1975-76.

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 06 REVIEW GREEK, *Mr. R. Wevers.*
- 10 GOD, MAN, AND THE HUMAN COMMUNITY, *Mr. G. Harris.*
- 390 INDEPENDENT STUDY, *Staff.*

The following interdisciplinary course is also offered by a member of this department.

- 107 CLASSICAL MYTHOLOGY, *Mr. R. Otten.*

Computer science

Professors L. Nyhoff, G. Van Zwalenberg (chairman, Department of Mathematics) Associate Professor S. Leestma (Director of Academic Computer Services)

THE DEPARTMENT OF MATHEMATICS OFFERS three programming courses for students who plan to use the computer in their discipline. An introductory course to computer science (Computer Science 243) and Numerical Analysis (Mathematics 341) are offered for students in applied mathematics or those who plan to do graduate work in computer science.

The Honeywell 656 computer, located in the College Center, is available for use by the students via teletypes located in various places on campus. Students not enrolled in a computer science course and who wish to use the computer should contact Mr. S. Leestma.

106 COMPUTER PROGRAMMING FOR BUSINESS. S, half course. Introduction to computer programming using the COBOL language. Applications will be taken from business data processing including accounting, inventory control, file maintenance, and report generation. *Mr. S. Leestma.*

107 COMPUTER PROGRAMMING FOR SOCIAL SCIENCE. F and S, half course. Introduction to computer programming using BASIC and FORTRAN languages. Intended for students majoring in areas other than mathematics and science. No mathematics prerequisite. Topics include computer-orientated solutions of prob-

lems in elementary numerical methods, computational algorithms, systems simulation, statistical calculations, and string variable manipulation. *Mr. L. Nyhoff.*

108 COMPUTER PROGRAMMING FOR SCIENCES AND MATHEMATICS. F and S, half course. Instruction in BASIC and FORTRAN languages, with applications of numerical methods to problems in biology, chemistry, engineering, mathematics, and physics. Intended for students majoring in mathematics and science. Prerequisite: Mathematics 111, which may be taken concurrently. *Mr. L. Nyhoff.*

243 **INTRODUCTION TO COMPUTER SCIENCE.** S. An introduction to the fundamental ideas used in the operation and the organization of a computing system. Topics to be considered include: compilers; basic structure of operating systems; organization of computer systems, addressing schemes, introduction to symbolic coding and assembly systems; and

digital representation of data. Prerequisite: 108 or 107 with the consent of the department. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 **COMPUTER MODELS IN MANAGEMENT,** *Mr. S. Leestma.*

Dutch

*Professors W. Bratt (chairman, Department of Germanic Languages), **W. Lagerwey (program adviser), Queen Juliana Chair of Language and Culture of the Netherlands.*

PREREQUISITE to concentration in Dutch is a minimum average of C (2.0) in 101, 102, 201, and 202 for students without a background in the language or in 203 and 204 for those with. In addition to this basic language foundation a student must complete three courses from the 300 level and two interims approved by the department.

101 **ELEMENTARY DUTCH.** F. An introductory course in the comprehension and use of spoken and written Dutch. *Mr. W. Lagerwey.*

305 **DUTCH CLASSICS.** Core. Study and discussion of several Dutch literary texts representative of the classical and modern periods of Dutch literature.

102 **ELEMENTARY DUTCH.** S. Continuation of 101. *Mr. W. Lagerwey.*

306 **DUTCH CLASSICS.** Core. A continuation of 305.

201 **INTERMEDIATE DUTCH.** F. Selected readings of modern Dutch prose and poetry. Review of grammar and syntax. *Mr. W. Lagerwey.*

307 **READINGS IN DUTCH CHURCH HISTORY.** F. A study in the Dutch language of source documents pertaining to the history of the Reformed churches in the Netherlands during the period 1450-1700.

202 **INTERMEDIATE DUTCH.** S. Continuation of 201. *Mr. W. Lagerwey.*

308 **READINGS IN DUTCH CHURCH HISTORY.** S. A continuation of 307 for the period 1700-1945.

203 **ADVANCED DUTCH.** F, core. A course intended to serve students who already have some knowledge of the Dutch language but who are deficient in their ability to speak, comprehend, and write the language.

309 **NETHERLANDS CIVILIZATION.** A study conducted in the Dutch language of several important aspects of Netherlandic civilization: language, literature, history, religion, art, architecture, social structure, and education.

204 **ADVANCED DUTCH.** S, core. A continuation of 203.

Earth science, geography, geology

Professors V. Ehlers (chairman, Department of Physics), C. Menninga

Students preparing for an elementary school certificate in general science studies must take 113; those preparing in social studies may take 101 or 113. A three-course sequence consisting of 113, 201, and 210 may be applied to a group concentration in either general science studies or social studies. For those selecting only one course, 113 is recommended for students expecting to teach in the primary grades, and 101 for those in the intermediate grades.

Students preparing to teach science at the junior high level should take 113 or 251-252. Those wishing to qualify for teaching earth science should take Geology 251-252, Astronomy 110, and an approved elective. Geology 251-252 satisfies the natural science core requirement.

101 INTRODUCTION TO GEOGRAPHY. F and S. A study of several aspects of geography—cultural, economic, and physical—in the context of world regional studies. The course seeks to develop a geographic perspective on current ecological and demographic problems using the principles and procedures of the discipline. *Mr. G. Oosterman.*

113 EARTH SCIENCE. F and S. A study of the physical characteristics of the earth. It includes consideration of the place of earth in space, the structure of earth's crust and interior, rocks and minerals, and processes giving rise to changes in earth's crustal and surface features. Includes laboratory. *Mr. C. Menninga.*

201 INTRODUCTION TO CULTURAL GEOGRAPHY. F. A study of man's interaction with his environment, including his climatic and physiographic setting. Consideration of the geographer's approach to gaining, organizing, and displaying information. Prerequisite: 113. *Mr. G. Oosterman.*

210 GEOGRAPHY OF NORTH AND SOUTH AMERICA. S. A comparative study of the physical, cultural, and economic aspects of both North and South America. Ecological and demographic factors will be considered in some detail. *Mr. G. Oosterman.*

251 PHYSICAL GEOLOGY. F. A study of the geological structure of the earth. Topics included are: minerals and rocks; formation and alteration of rocks in the earth's crust; earth's interior and surface structure; processes producing geological changes; earth as a representative planetary body in space. Includes laboratory. Prerequisite: previous or concurrent study in chemistry. *Mr. C. Menninga.*

252 HISTORICAL GEOLOGY. S. A study of geological structures that have existed in the past and of the changes and development that have taken place in the earth's crust. Evidences for these past structures and events are taken from present rock strata, including the fossil record. Includes laboratory. Prerequisite: 251. *Mr. C. Menninga.*

390 INDEPENDENT STUDY IN GEOLOGY. Full course or half course. Prerequisite: permission of department. *Mr. C. Menninga.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 A TALE OF THREE CITIES: URBAN GEOGRAPHY AS EMBEDDED IN CHICAGO, GRAND RAPIDS, DETROIT *Mr. G. Oosterman.*

390 INDEPENDENT STUDY, *Staff.*

Economics and business

*Professors G. Monsma, D. Pruis (acting chairman)
Assistant Professors E. Dykema, K. Kuipers, J. Tiemstra
Instructor R. Medema*

Principles of Economics (151) must be completed with a minimum grade of C (2.0) for admission to any of the departmental programs of concentration. An appropriate concentration must be selected from the three listed below: the economics concentration provides thorough coverage of economic theory and analysis, the business economics concentration is the usual business administration program, and a group concentration may be arranged to accommodate particular interests. For teacher education, requirements are given below with each concentration.

Economics concentration requirements are 151, 207, 321, 322, six other courses (five for teacher education) including at least four (three for teacher education) from 331-342 and 400, and the mathematics cognate.

Business Economics concentration requirements are 151, 207, 212, 313, 316, 318, 321, 322, two other courses including at least one from 331-339 and 395 (one other course from 331-339 and 395 for teacher education), and the mathematics cognate.

Economics Group concentration requirements are 151, 207, 321 or 322, three other economic courses (four for teacher education), and three courses in either history, political science, psychology, or sociology. For teacher education, one additional social science course is required. One approved interim course may be included in a program of concentration.

The minimum mathematics cognate requirement is 205 and 206, which should be completed in the sophomore year. In view of the importance of mathematics in the study of economic theory and its applications in economic and business analysis, Mathematics 111, 112, 211, 212, and 343 are recommended. In the cognate requirements, 111 may be substituted for 205, and 343 may be substituted for 206.

An interdisciplinary group concentration involving six courses in eco-

nomics and business and six courses in mathematics is possible. Interested students should consult the chairman.

For teacher education, an appropriate minor should be approved by the chairman. Economics minor requirements are 151, either 321 or 322, and four additional courses which may include two interims. To accompany either the Economics or Business Economics concentration, a minor in mathematics or a group minor including mathematics may be arranged.

The core requirement in the social science is met by 151.

151 PRINCIPLES OF ECONOMICS. F and S, core. A study of the principles of resource allocation, income distribution, prices, production, income and employment levels, and economic growth with an emphasis on the market system. The course is planned to help students understand basic domestic and international economic problems and to prepare them for further work in economics, history, and government. *Mr. E. Dykema, Mr. G. Monsma, Mr. J. Tiemstra.*

207 INTRODUCTION TO FINANCIAL ACCOUNTING. F. An introduction to accounting with emphasis on principles of asset valuation and income determination. *Mr. K. Kuipers, Mr. R. Medema, Mr. D. Pruis.*

212 FINANCIAL AND MANAGERIAL ACCOUNTING. S. Continuation of Economics 207. Interpretation of published financial statements. Introduction to cost accounting and to reporting to management. *Mr. R. Medema, Mr. D. Pruis.*

307 INTERMEDIATE ACCOUNTING. F. A study of financial accounting theory and generally accepted accounting principles applied to asset valuation, accounting for liabilities and stockholders' equity, related income determination problems, and preparation of corporate financial statements. Prerequisite: 212. *Mr. K. Kuipers.*

308 ADVANCED ACCOUNTING. S. Continuation of 307 with applications to accounting for partnerships, preparation of consolidated financial statements, and accounting for installment and consignment sales. Introduction to governmental or fund accounting. Prerequisite: 307. *Mr. K. Kuipers.*

309 LAW IN BUSINESS. F. An introduction to American business law: origins, development, legal institutions, and processes. The legal environment of business: Uniform Commercial Code and case law of business transactions; other topics selected from agency, property, partnership, corporation, regulatory, and administrative law. *Mr. T. Waalkes.*

312 COST ACCOUNTING. F. Principles and methods of accounting for manufacturing and operating costs, with emphasis on analysis and reporting to management to facilitate planning, control, and decision-making. Prerequisite: 212. *Mr. D. Pruis.*

313 BUSINESS ORGANIZATION AND MANAGEMENT. F. A study of the principles and problems of organization and management for optimal administration of the general management function in the firm, with emphasis on effective utilization of the human resources of the firm. Prerequisites: 151 and 207. *Mr. R. Medema.*

316 FINANCIAL PRINCIPLES. S. A study of the principles and problems involved in the optimal administration of the finance function in the firm, including financial aspects of the form of organization, and the allocation of capital to and within the firm. Prerequisites: 151 and 207. *Mr. K. Kuipers.*

318 MARKETING. S. A study of the principles and problems involved in the optimal administration of the marketing function in the firm, including production and promotional policy, price determination, and distribution channels. Prerequisite: 151. *Mr. R. Medema.*

321 **THE NATIONAL INCOME.** F. An intermediate course in macroeconomic theory which studies the theory of aggregate demand, the level of employment, the general level of prices, and economic growth. Prerequisite: 151. *Mr. E. Dykema.*

322 **THE PRICE SYSTEM.** S. An intermediate course in microeconomic theory, emphasizing the role of the price system in organizing economic activity and an evaluation of its efficiency and equity. Prerequisite: 151. *Mr. G. Monsma.*

331 **CREDIT AND MONETARY THEORY.** F. A study of the principles of money, banking, and credit with emphasis on monetary theory and policy and their role in domestic and international economics. Prerequisite: 151. *Mr. J. Tiemstra.*

334 **INDUSTRIAL MARKETS AND PUBLIC CONTROL.** S. A study of the structure, control, and market behavior of American industry, and the public policies for the control of economic power. Prerequisite: 151. *Staff.*

335 **LABOR ECONOMICS.** S. A study of the labor market and its relation to the economy as a whole, with emphasis on wage theory, the economic impact of trade unions, unemployment, social security, human capital formation, manpower policies, and public policy. Prerequisite: 151. *Mr. G. Monsma.*

338 **INTERNATIONAL ECONOMICS.** S. A study of international economic relations, stressing the fundamentals of trade theory, the balance of payments, problems of international disequilibrium, trade barriers, and efforts to promote international economic stability and

growth. Prerequisite: 151. *Mr. J. Tiemstra.*

339 **THEORY OF PUBLIC FINANCE.** S. A study of the economics of government expenditures, taxation, and debt, with emphasis on allocation of resources, income distribution, and level of employment and production in the economy. Prerequisite: 151. *Mr. G. Monsma.*

342 **HISTORY OF ECONOMIC THOUGHT.** S. An examination of the development of economics ideas, mainly in the last two hundred years, in the context of the philosophical and historical conditions in which they emerged. Prerequisite: 151 or the permission of the instructor. *Mr. E. Dykema.*

390 **READINGS AND RESEARCH.** F, I, S. Prerequisite: permission of the chairman.

395 **ECONOMICS SEMINAR.** F. A concentrated study of one or more significant problems in economics, designed primarily for majors planning to pursue graduate studies. Emphasis on oral and written reports and on extensive reading in current economic journals. Prerequisites: senior rank and consent of the instructor.

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 10 **FEDERAL INCOME TAXES,** *Mr. K. Kuipers, Mr. R. Medema.*
- 11 **RADICAL AND ORTHODOX ECONOMICS,** *Mr. G. Monsma.*
- 12 **ESCHATOLOGY AND ECONOMIC GROWTH,** *Mr. J. Tiemstra.*
- 31 **INTERNSHIP IN BUSINESS,** *Mr. D. Pruis.*
- 390 **INDEPENDENT STUDY,** *Staff.*

Education

*Professors G. Besselsen, N. Beversluis, J. De Beer, P. De Boer, P. Lucasse, D. Opperwal (chairman), *J. Wiersma*
Assistant Professors K. Blok, W. Hendriks, T. Hoeksema, L. Stegink, †D. Westra
Director of Teacher Certification and Field Services M. Strikwerda

THE VARIOUS TEACHER EDUCATION PROGRAMS are described in detail on pages 47-53. Prospective secondary teachers should consult with an

adviser in the department in which they expect to major. The coordinator of secondary education is Mr. Philip Lucasse. Prospective elementary teachers should consult with Mr. William Hendriks, coordinator of elementary education.

The elementary teacher education program requires nine courses: 301, 303, 304, 305, 322; and, during the internship semester, 345 and 355. The secondary teacher education program requires seven courses: 301, 303, 304, and, during the internship semester, 346, and 356.

204 HISTORY OF AMERICAN EDUCATION. F and S. A study of the American school systems in their historical setting from colonial times to the present. Special attention is given to the ways in which social and intellectual movements affect educational theory and practice. Not offered 1975-76.

220 TEACHING ARITHMETIC IN ELEMENTARY SCHOOLS. Both content and methods in arithmetic as it is taught in the grades will be considered. Prerequisite: 301 or the equivalent. Not offered 1975-76.

301 PSYCHOLOGY OF EDUCATION. F and S, core. Orientation to the field of psychology. A study of the learner, the learning process, and the kinds of learning. Should be taken during the junior or senior year. *Staff.*

303 INTRODUCTION TO TEACHING. F and S. An analysis of the teaching-learning process in the classroom. Includes observation and participation in school activities. Prerequisite: concurrent registration 301. *Staff.*

304 PHILOSOPHY OF EDUCATION. F, S. An analysis of the assumptions, aims, and practices of two major educational philosophies—experimentalism and essentialism—followed by an analysis of the theory and practice of Christian education. Readings in typical writers from all three perspectives. Study of how educational changes tend to reflect changed social and philosophical climates and of how to evaluate these changes in the light of a biblical perspective of man, society, and human calling in the world. Students will work out a biblical approach to the theory and practice of Christian education. Prerequisite: 301, 303, and Philosophy 153. *Mr. H. Beverluis, Mr. P. De Boer, Mr. D. Oppewal.*

305 ELEMENTARY TEACHING METHODS. F and S. A study of the methods of teaching the various subjects taught in the elementary school. Prerequisite: 303. *Staff.*

307 TEACHING READING SKILLS IN CONTENT AREAS. F and S, one half course. An analysis of the problems encountered by students reading in typical expository texts; a presentation of the responsibilities and qualifications of teachers in content fields for applying principles of reading in daily assignments; demonstrations of techniques that can be used to meet the wide range of reading levels found in the average classroom. Optional tutoring experiences. A recommended elective for students in secondary teacher education and any student interested in refining college-level reading skills. *Mrs. B. Bosma.*

322 METHODS OF TEACHING READING IN THE ELEMENTARY GRADES. F and S. A study of the nature of the reading process and of the basic skills needed in learning to read; diagnostic reading tests; preparation of systematic instructional episodes. Reading research and field experience options. Prerequisites: Education 301 and 303; Speech 214 is recommended. *Mrs. K. Blok, Mrs. J. Kool.*

345 TEACHING INTERNSHIP FOR ELEMENTARY TEACHERS. F and S, three courses. Includes classes and seminars in teaching the various subjects offered in the elementary school. Prerequisites: approval of the department and a cumulative grade point average of C (2.0). *Staff.*

346 TEACHING INTERNSHIP FOR SECONDARY TEACHERS. F and S, three courses. Includes classes and seminars in teaching the various disciplines. Pre-

requisites: approval of the department, approval of the major department, cumulative grade point average of C. (2.0). *Staff.*

355 SEMINAR IN ELEMENTARY TEACHING METHODS. F and S. Sections are taught in each area of elementary education. Each student will bring to the seminar his experiences and problems of relating education theory to classroom practice. Prerequisite: concurrent registration in 345. *Staff.*

356 SEMINAR IN SECONDARY TEACHING METHODS. F and S. Sections are taught in the academic disciplines and will focus on effective methods of teaching. Prerequisite: concurrent registration in 346. *Staff.*

SPECIAL EDUCATION

216 EDUCATION OF EXCEPTIONAL CHILDREN. F and S. An orientation to all disability areas included within the field of special education. The course acquaints the students with the basic information and the specialized vocabulary needed for dealing with handicapping conditions. Consideration of the major issues in special education as well as with contemporary educational practices. *Mr. T. Hoeksema.*

306 MENTAL RETARDATION. F. Study of cognitive, affective, and social characteristics of the mentally impaired, with attention given to several common etiologies. Examination of issues involved in defining mental retardation. Investi-

gation of diagnostic treatment and preventive techniques. Differentiation of mental retardation from related conditions. Discussion of research and emerging concepts within the field. Special Education 216 must be taken previously or concurrently. *Mr. T. Hoeksema.*

352 SOCIETY AND MENTAL RETARDATION. S. Implications of mental retardation on adaptive behavior with particular emphasis on adult status. Consideration of crucial social needs of the mentally impaired and critical analysis of past and present programs and services for the retarded. Study of the impact of retarded persons on family systems. *Mr. T. Hoeksema.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 10 PRACTICUM: INTRODUCTION TO TEACHING IN KINDERGARTEN, *Mrs. K. Blok.*
- 11 THE AMERICAN EXPERIENCE: CHANGING VISIONS OF COMMUNITY, *Mr. P. De Boer.*
- 12 INTERIM IN APPALACHIA, *Mr. P. Lucasse.*
- 30 CURRENT ISSUES IN HEALTH EDUCATION, *Mr. W. Hendricks.*
- 390 INDEPENDENT STUDY, *Staff.*

The following interdisciplinary course is offered by a member of this department.

- 117 THE PAST AS PROLOGUE: A CENTURY OF CALVINIST EDUCATION, *Mr. H. Brinks, Mr. D. Oppewal*

Engineering

Professor J. Bosscher (chairman)
Associate Professor L. Van Poolen

CALVIN COLLEGE offers a basic engineering program which, after subsequent study of approximately three semesters in an accredited school of engineering, can result in a bachelor's degree from each school attended. For details see pages 56 and 57.

101 GRAPHICAL COMMUNICATION AND CONCEPT DESIGN. F. Graphical techniques for spatial analysis; a study of

basic topics in engineering and architectural drawing to provide facility in the transmission of ideas through ac-

cepted graphical means. Areas covered include orthographic projection, free hand sketching, pictorial representation, auxiliary views, sections and conventions, and basic dimensioning; an introduction to the design process by means of lectures and assigned architectural or engineering projects. Readings are also assigned in design related areas of creative thinking, aesthetics, models, economics, and human satisfaction. *Staff*.

102 ENGINEERING COMMUNICATION, ANALYSIS AND DESIGN. S, one-half course. A continuation of 101 in which the graphical presentation culminates in the working drawing. The concept of a tolerance is added to that of dimensioning. Analysis tools such as graphical mathematics and data presentation including graphical algebra and calculus, the determination of empirical equations from experimental data, functional scales, and basic nomography are presented. An introduction to computer graphics is given. An engineering project is assigned to further enhance creative skills in concept design. Prerequisites: Mathematics 111, Engineering 101, and enrollment in Computer Science 108. *Staff*.

202 STATICS AND DYNAMICS. S. Study of fundamental principles of mechanics and their application to the problems of engineering. Vector algebra, forces, moments, couples, friction, virtual work, kinematics of a particle, kinematics of a rigid body, dynamics of particles and rigid bodies, impulse, momentum, work, and energy are presented in two and three dimensions. Must be preceded by Physics 126 and accompanied by Mathematics 211. *Staff*.

205 PRINCIPLES OF MATERIALS SCIENCE. F. An introductory course in the science of engineering materials. Engineering properties are correlated with internal structures: atomic, crystal, micro, macro, and service environments: mechanical, electrical, thermal, chemical, magnetic and radiation. Prerequisite: Chemistry 103. *Mr. J. Bosscher*.

305 MECHANICS OF MATERIALS. F. Application of principles of mechanics

to solution of problems in stress and strain of engineering materials, including resistance to force, bending, torque, shear, eccentric load, deflection of beams, buckling of columns, compounding of simple stresses, introduction to theories of failure and energy methods. Laboratory experiments are used to emphasize principles. Prerequisite: 202. *Mr. J. Bosscher*.

308 INTRODUCTION TO CIRCUIT ANALYSIS AND ELECTRONICS. S. An introduction to the theory of electronic circuits and devices and their applications. The following are included: basic A.C. circuit concepts; diode and transistor characteristics and applications; amplifiers; feedback circuits; oscillators; operational amplifiers and their applications; logic elements and digital circuits. This course assumes a prior knowledge of basic D.C. circuit concepts, including node and loop methods and transient circuits, but begins with a brief review of these topics. Individualized laboratory stations are utilized to emphasize basic concepts. Prerequisites: Mathematics 211 and Physics 225. *Staff*.

309 FLUID MECHANICS. F. Basic properties of real and ideal fluids. Fluid statics. Lagrangian and Eulerian descriptions of flow. Continuity, energy, and linear momentum equations in differential and integral forms for compressible and incompressible flows. One dimensional flow analysis. Introduction to boundary layer theory and one dimensional compressible flows. Dimensional analysis and laboratory experiments utilized to determine significant flow parameters. Prerequisites: Mathematics 212 and Physics 225. *Mr. L. Van Poolen*.

310 THERMODYNAMICS. S. An introduction to concepts of work and heat, properties of a pure substance, first law, second law, entropy, thermodynamic relations, mixtures, and an introduction to statistical thermodynamics. Prerequisites: Mathematics 212 and Physics 225. *Staff*.

312 PRINCIPLES OF ANALOG COMPUTATION. F or S, half course. An introduction to the theory and techniques of analog computation, including computer

solutions for representative forms of linear and non-linear differential equations. Includes introduction to iterative analog computation using the AD-256 computer. Prerequisites: Mathematics 212 or permission of the instructor. *Mr. J. Bosscher.*

314 **VIBRATION ANALYSIS.** S. Analysis of mechanical vibration in both transient and steady state regimes, employing analytical and computer techniques for solution. Linear and non-linear problems are investigated with original inquiry suggested and encouraged. Prerequisites: Mathematics 212 and Physics 225. *Mr. J. Bosscher.*

316 **HEAT TRANSFER.** S. An introduction to the analysis of steady and unsteady conduction, of free and forced convection, and of radiation modes of heat transfer. Laboratory experiments are used to emphasize principles. Prerequisite: Mathematics 212 and Physics 225. *Mr. L. Van Poolen.*

318 **CONTROL SYSTEMS ANALYSIS.** S. An introduction to linear feedback control theory, including transient and frequency response; stability; systems performance; control modes and compensation methods. Hydraulic, electrical, pneumatic, and inertial components and systems are investigated and employed. Prerequisites: Mathematics 212 and Physics 225. *Mr. J. Bosscher.*

390 **INDEPENDENT STUDY.** F, I, S. Independent readings and research. Prerequisite: permission of the chairman. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

36 **HEAT TRANSFER,** *Mr. L. Van Poolen.*

The following interdisciplinary course is also offered by a member of this department.

110 **INTERDISCIPLINARY PROBLEM SOLVING,** *Mr. J. Bosscher and Staff.*

English

Professors G. Harper (chairman), †I. Kroese, K. Kuiper, P. Oppewall, H. Ten Harmsel, R. Tiemersma, S. Van Der Weele, C. Walhout, S. Wiersma

Associate Professor W. Holkeboer

Assistant Professors H. Baron, M. Walters, M. Zylstra

Assistant Instructor L. Spoelman

Students may declare a major in English only after completing 100 and 200 with a minimum average of C (2.0). The recommended program is 303, 310, 311, 329 or 330, four other literature courses, and one interim.

Students who wish to be admitted to the teacher education program not only must meet the grade requirement in 100 and 200 but must also pass a screening test, which is given in November, April, and July. The recommended program for secondary education is: 100, 200, 202, 203, 310, 311, 313 or 315, 329, and 336. The program for elementary education requires 212 and 225 instead of 310 and 311. The adviser with particular concern for these programs is Mr. K. Kuiper.

The recommended minor is 100, 200, 202, 203, 212, and 313 or 315. Interims may substitute for any course in this program except 100.

English 320 and 321 may be part of the teaching minor in the Academic Study of Religions.

The core requirements in written rhetoric may be met by 100 or by examination. The first core requirement in the fine arts is typically selected from 200, 202, 203, 212, and 303. Any literature course except 225 and 251 will satisfy the additional core requirements in the fine arts.

100 WRITTEN RHETORIC. F and S. A study of written English rhetoric, with extensive practice in writing. Certain sections emphasize tutorial teaching. *Staff.*

200 INTRODUCTION TO LITERATURE. F and S. A study of the forms and genres of literature, with critical exercises, selected readings, and a course paper. *Staff.*

202 A SURVEY OF ENGLISH LITERATURE. F. A comprehensive study of English literature from Chaucer through Johnson. The course is conducted intensively in the major authors rather than inclusively. *Miss Ten Harmsel.*

203 A SURVEY OF ENGLISH LITERATURE. S. A continuation of 202. The course proceeds from Wordsworth through Eliot. *Staff.*

212 AMERICAN LITERARY CLASSICS. F and S. A critical study of American masterpieces as the literary embodiment of the evolving minds, ways, and values of the American cultural process. Emphasis upon eight major authors. Not open to students who have had 310 or 311 or to English majors. *Staff.*

214 BLACK AMERICAN WRITERS. S. An intensive study of the selected works of major Black American writers against the background of the development of Black American writing. *Mr. P. Oppewall.*

225 CHILDREN'S LITERATURE. F and S. Through intensive reading this course develops the history of children's literature, some standards for evaluating children's books, and knowledge of some of the best literature for children. Prerequisite: English 100 or its equivalent. *Mrs. M. Zylstra.*

251. INTRODUCTION TO CINEMA. S. A study of the development and structure of cinema as an art form and as a cultural medium. The course aims to develop the student's understanding of cinematic language and to guide him in assessing films and film values. Course work includes the viewing and analysis of films, readings in textbooks and criticism, written critiques, and a major project, either in filmmaking or film research. *Mr. J. Kroese.*

302 MEDIEVAL ENGLISH LITERATURE. F. A study of Chaucer's *Canterbury Tales* and *Troilus and Criseyde* as reflecting Chaucer's literary genius and the major cultural phenomena of his time. Supplementary study in translation of *Beowulf*, *Gawain and the Green Knight*, and portions of *Piers Plowman*. *Mr. J. Timmerman.*

303 SHAKESPEARE. F and S. A study of selected works of William Shakespeare. *Staff.*

304 ENGLISH LITERATURE OF THE SIXTEENTH CENTURY. S. A study of the lyricists and sonneteers, the prose writers, and the dramatists (exclusive of Shakespeare). An intensive study of the poetry of Spenser and the drama of Marlowe. Not offered 1975-76.

305 ENGLISH LITERATURE OF THE SEVENTEENTH CENTURY. F. A study of important poetry and prose in England from Donne to Dryden, with particular emphasis upon the poetry of Donne, Herbert, Vaughan, Traherne, and Herrick, and upon the prose of Donne, Browne, and Taylor. *Mr. S. Wiersma.*

306 MILTON. S. An intensive study of the poetry and prose of John Milton. Not offered 1975-76.

307 **ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY.** S. A study of English poetry and prose in the eighteenth century, with emphasis on the neo-classicists, Pope, Addison, Swift, and Johnson, and a study of the beginnings of the romantic outlook in Gray, Thomson, and Cowper. Not offered 1975-76.

308 **ENGLISH LITERATURE OF THE NINETEENTH CENTURY.** F. A study of the Romantic writers of England in both poetry and prose, with intensive critical work on Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats. Not offered 1975-76.

309 **ENGLISH LITERATURE OF THE NINETEENTH CENTURY.** S. A continuation of 308. A study of the Victorian writers of England in both poetry and prose, with intensive critical work on Tennyson, Browning, and Arnold among the poets, and Arnold, Newman, Huxley, and Ruskin among the prose writers. *Mr. R. Tiemersma.*

310 **AMERICAN LITERATURE.** F. A study of important writings in the colonial and revolutionary periods, with emphasis upon the culture and writings of the New England group. *Staff.*

311 **AMERICAN LITERATURE.** S. A continuation of 310. Intensive study of Whitman and Twain. A survey of the realistic movement, the new poetry, and important twentieth-century fiction and criticism. *Staff.*

313 **MODERN ENGLISH AND AMERICAN POETRY.** S. A study of the lyric and dramatic poetry of England and America from 1890 to the present. *Mr. C. Walhout.*

314 **THE ENGLISH NOVEL.** S. A survey of the English novel from its beginnings through Conrad, with emphasis upon the art and thought of the major novelists. Special attention is paid to the development of realistic, romantic, epic, and symbolic strains in modern fiction. The course includes the reading of at least twelve novels. Prerequisite: English 200. *Miss H. Ten Harmsel.*

315 **CONTEMPORARY BRITISH AND AMERICAN FICTION.** F and S. Intensive

reading of selected works of major twentieth century British and American novelists. *Mr. P. Oppewall.*

318 **STUDIES IN AMERICAN LITERATURE.** S. Intensive studies of three or four American writers selected from different periods of American literary history, with the selection changed from year to year. Typical groupings are: Hawthorne, James, Faulkner; Whitman, Dickinson, Frost, Stevens; Thoreau, Twain, Ellison, Baldwin; and Melville, Hemingway, O'Neill. Prerequisites: 310, 311. *Staff.*

320 **WORLD LITERATURE.** S. A course of selected readings and lectures in the literature of non-English speaking people, ancient and modern, with special emphasis on the period from Dante to Solzhenitsyn, and with particular attention to significant forms and themes. *Mr. S. Vander Weele.*

321 **MODERN DRAMA.** F. Plays by the following authors are read and discussed in relation to the major movements in modern drama: Ibsen, Shaw, Giraudoux, Pirandello, Brecht, Ionesco, Beckett, Behan, Delaney, Gelber, Genêt, Pinter. *Miss M. A. Walters.*

329 **LINGUISTICS.** F. A course that requires previous mastery of a traditional grammar as background to assigned readings in scholarly non-structural, structural, and transformational grammars. The course gives attention to assumptions informing the nomenclature, methodology, and scope of the assigned grammars. The course incidentally considers the relationship of these grammars to the study of composition and literature. *Mrs. C. Van Dyke.*

330 **HISTORY OF THE ENGLISH LANGUAGE.** S. An analysis of the changes that have occurred throughout the history of the English language, based on an intensive study of selected portions of the *Oxford English Dictionary* and passages from Chaucer, Shakespeare, and various English translations of the Bible. *Mr. S. Wiersma.*

331 **LITERARY CRITICISM.** S. A course in critical theory, historically and normatively pursued. Analysis of the principal contributions to Western literary

criticism, as well as some practice of criticism on very recent literature. *Mr. C. Walhout.*

332 **ADVANCED COMPOSITION AND RHETORIC.** F. A practical course in advanced expository writing. Readings in the formal essay, with much systematic writing in such types of composition as description, the formal and informal essay, the informative and feature article, the editorial, and the book review. Open to students who have a B (3.0) in 100 and permission of the instructor. Not offered 1975-76.

333 **THE WRITING OF PLAYS, POEMS, AND STORIES.** S. A course in the principles of composition of plays, poems, and stories. Works by contemporary authors are analyzed in the light of these principles. Students will practice writing in all three forms. Admittance to the class may be granted by the instructor on the recommendation of the student's instructor in 100. Prerequisite: a grade of B (3.0) in 100. *Staff.*

336 **TEACHING OF WRITING.** F and S. An introduction to the variety of secondary school curricula in English with pedagogical assistance in the teaching of writing. Frequent exercises in composition and revision. *Mr. H. Baron, Mr. R. Tiemersma.*

390 **READING AND RESEARCH.** F, I, S. Prerequisite: permission of the chairman.

395 **SEMINAR.** F. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 10 **EDUCATING THE IMAGINATION,** *Mr. H. Baron.*
- 11 **C. S. LEWIS,** *Mr. S. Vander Weele.*
- 12 **ERNEST HEMINGWAY: THE MAN AND HIS WORK,** *Mr. K. Kuiper.*
- 13 **T. S. ELIOT,** *Mr. S. Wiersma.*
- 14 **WORDS, WORDS, WORDS,** *Mr. R. Tiemersma.*
- 15 **SIX CONTEMPORARY AMERICAN POETS,** *Mr. C. Walhout.*
- 16 **AN INTRODUCTION TO AMERICAN-JEWISH WRITERS,** *Mrs. W. Holkeboer.*
- 30 **PROFESSIONAL JOURNALS IN ENGLISH LANGUAGE AND LITERATURE,** *Miss H. Ten Harmsel.*
- 31 **IMAGES OF WOMEN IN LITERATURE,** *Miss M. Walters, Mrs. M. Zylstra.*
- 390 **INDEPENDENT STUDY,** *Staff.*

The following interdisciplinary course is also offered by a member of this department.

- 118 **JOURNALISM WORKSHOP,** *Mr. P. Oppewall, Mr. T. Ozinga.*

French

*Professor A. Otten (chairman, Department of Romance Languages)
Instructor E. Monsma
Assistant C.-M. Baldwin*

STUDENTS may declare for a program of concentration in French after having completed two units of college French with a minimum average grade of C (2.0). The program of concentration includes 201, 202, 217, 218, 311, 312, 313, 314, 321, and 322. The major program for prospective teachers requires 201, 202, 217, 218, 321, 322, and three from the following: 311, 312, 313, 314, 372, and French Interim Abroad. The minor program for prospective secondary teachers requires 201, 202, 217, 218, 321, 322. Programs for students beginning French in college, including pros-

pective secondary teachers, should be worked out with the chairman. Cognates in a second foreign language, art (231, 232), and English or American literature (202, 203, 212, 303) are recommended. A year-abroad program is available in Paris. All courses above 102 meet core requirements; 217, 218, 311, 312, 313, 371, and 372 meet core requirements in the fine arts.

LANGUAGE

101 **ELEMENTARY FRENCH.** F. An introductory course in the comprehension and use of spoken and written French, taking into account individual differences in student ability. *Mrs. C.-M. Baldwin.*

102 **ELEMENTARY FRENCH.** S. Continuation of 101. Prerequisite to a program of concentration are 101 and 102. *Mrs. C.-M. Baldwin.*

121-122-123 **INTRODUCTORY AND INTERMEDIATE FRENCH.** F-I-S. A closely integrated sequence involving two semesters and the interim for students who have completed two years of high school French with less than a C average or for students who studied French in the tenth and eleventh grades. Students in the teacher education programs who have had no foreign language in high school may register for this course if they have the permission of the department. Students who have previously studied French are assigned to this class on the basis of a placement test administered at the time of fall registration. *Staff.*

201 **INTERMEDIATE FRENCH.** F, honor section. Further training in spoken and written French, study of the structure of the language, and reading of important literary texts. Conducted almost exclusively in French. *Mrs. E. Monsma.*

202 **INTERMEDIATE FRENCH.** S. Continuation of French 201. *Mrs. E. Monsma.*

321 **ADVANCED FRENCH.** F, half or full course. For the advanced student who wishes to improve his facility in the language to an exceptional degree, or who is preparing for graduate study or for the teaching of French. The student may register either for both the spoken and written sections or may elect one section per semester, thus completing the two-course sequence (321-322) over a

two-year period. The section in spoken French stresses oral fluency through a variety of activities such as topical discussions based on selected readings by modern authors, basic and idiomatic vocabulary drills, and pronunciation work in the laboratory. The section in written French stresses competence through the systematic study of vocabulary, grammatical structures, and a progression of written assignments designed to develop the student's capacity to write in the different genres, including the *dissertation*. Prerequisites: 202. *Mrs. C. M. Baldwin.*

322 **ADVANCED FRENCH.** S, half or full course. Continuation of 321. *Mrs. C.-M. Baldwin.*

LITERATURE

French 217 or 218 is prerequisite to all other courses in literature.

217 **INTRODUCTION TO FRENCH LITERATURE.** F. An introduction to the major writers and movements in the history of French literature from the Middle Ages through the eighteenth century. Extensive reading, lectures, *explanations de texte*, reports, and papers. Conducted in French. *Mr. A. Otten.*

218 **INTRODUCTION TO FRENCH LITERATURE.** S. Continuation of 217. Study of the nineteenth and twentieth centuries. French 217 and 218 are designed to give the student an acquaintance with a large number of important works in French literature as well as the basic knowledge and historical framework necessary for further literary study. *Mr. A. Otten.*

311 **FRENCH DRAMA.** F odd years. A study of dramatic literature from the Middle Ages to the present day, with emphasis on classical and contemporary drama. Conducted in French. *Mrs. E. Monsma.*

312 THE FRENCH NOVEL. S odd years. A study of fiction from the Middle Ages to the present day with special emphasis on the nineteenth and twentieth centuries. Conducted in French. *Mrs. E. Monsma.*

313 FRENCH POETRY. F even years. A study of the history and nature of French poetry by means of extensive reading and intensive examination of major poets, with special attention to the themes, forms, and techniques of poets of the modern period, beginning with Baudelaire. Conducted in French. *Mr. A. Otten.* Not offered 1975-76.

314 FRENCH PROSE. S even years. A study of major writers expressing French thought, spirit, and sensibility in non-fiction from Montaigne to Sartre. Special attention is paid to Calvin, Pascal, *les philosophes*, and the existentialists. Conducted in French. *Mr. A. Otten.* Not offered 1975-76.

371 LITERARY DOCTRINES AND PROBLEMS. F odd years. An advanced course devoted largely to literary theory, using as its point of departure a selection of such significant documents in the history of French literature as Du Bellay's *Défense et illustration de la langue française*, the various statements relating to the *Querelle des anciens et des modernes*, Hugo's *Préface de Cromwell*, the transcript of Flaubert's trial, and others. This course includes an examination of the situations and writings which elicited these documents. Normally this course should be taken after completion of the genre courses. Conducted in French. *Mr. A. Otten.* Not offered 1975-76.

390 INDEPENDENT STUDY. I. Introduction to the materials and methods of re-

search. In consultation with the instructor, the student will define a problem in literary history, criticism, or theory, will do research in it, and present the results of his study in an organized *dissertation*, written in French. Limited to the senior prospective graduate student. *Staff.*

395 SEMINAR.

CIVILIZATION

372 FRENCH CIVILIZATION. F odd years. A study of examples of non-literary artistic expressions of the French mind in painting, architecture, and music, and of French religious, political, and social institutions. Designed to enhance the student's knowledge of French culture and to enrich his literary studies, this course is a complement to, rather than a substitute for, literary studies. Conducted in French. *Mr. A. Otten.* Not offered 1974-75.

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 FRENCH INTERIM ABROAD, *Mr. A. Otten.*

11 FICTION IN FRANCE, *Mrs. E. Monsma.*

13 REFLECTIONS OF A PEOPLE: MODERN QUEBEC THEATER, *Mrs. C.-M. Baldwin.*

122 INTERMEDIATE FRENCH, *Staff.*

390 INDEPENDENT STUDY, *Staff.*

The following interdisciplinary course is also offered by a member of this department.

116 INTRODUCTION TO BILINGUAL EDUCATION, *Mrs. E. Greenway.*

Geography and geology

See the section, EARTH SCIENCE, GEOGRAPHY, AND GEOLOGY for information on geography and geology.

German

*Professors W. Bratt (chairman, Department of Germanic Languages), J. Lamse
Associate Professors C. Hegewald, B. Kreuzer*

STUDENTS should complete their first college year of German with a minimum average of C (2.0) before applying for admission to the major program. This concentration normally includes 201, 202, 215, 217, 218, and four additional courses. Students enrolled in the teacher education program must include 216 and 250. A teaching minor consists of a sequence of six courses including 201, 202, 215, and three additional courses. The teacher education adviser is Mr. B. Kreuzer. Students contemplating either a German major or minor are encouraged to consult with a departmental adviser early in their programs. A year-abroad program is available in Austria and Germany.

All courses numbered 217 and above, including 361, may be applied toward the fulfillment of the fine arts core requirement.

101 **ELEMENTARY GERMAN.** F. A beginners' course stressing both written and spoken German and including an introduction to German culture. *Staff.*

102 **ELEMENTARY GERMAN.** I and S. Continuation of 101. *Staff.*

121-122-123 **INTRODUCTORY AND INTERMEDIATE GERMAN, F-I-S.** A closely integrated sequence involving two semesters and the interim for students who have completed two years of high school German with less than a C average or for students who studied German in the tenth and eleventh grades. Students in the teacher education programs who have had no foreign language in high school may register for this course if they have the permission of the department. Students who have previously studied German are assigned to this class on the basis of a placement test administered at the time of fall registration. *Staff.*

201 **INTERMEDIATE GERMAN.** F, core. Selected readings, with a continued emphasis on the development of spoken and written German. Prerequisites: 101-102, or four units (two years) of high school German. *Staff.*

202 **INTERMEDIATE GERMAN.** S, core.

Continuation of 201. Prerequisite: 201. *Staff.*

203 **INTERMEDIATE GERMAN.** F, core. A one-semester course intended specifically for students who have successfully completed three years (six units) of high school German. Selected readings and continued language study. *Mrs. W. Wierenga.*

215 **INTERMEDIATE ORAL AND WRITTEN COMPOSITION.** F. Exercises, compositions, and drills designed to develop in the student intermediate competence in speaking and writing idiomatic German. Prerequisite: 202. *Mr. J. Lamse.*

216 **ADVANCED ORAL AND WRITTEN COMPOSITION.** S. Continuation of 215. *Mr. B. Kreuzer.*

217 **READINGS IN MAJOR GERMAN AUTHORS.** F, core. Basic introduction to German literature. Selected readings in major German authors from 1750 to 1850. Assigned readings and papers. Prerequisite: 202. *Mr. W. Bratt, Mr. B. Kreuzer.*

218 **READINGS IN MAJOR GERMAN AUTHORS.** S, core. Continuation of 217.

Readings in major German authors from 1850 to the present. Prerequisite: 202. *Mr. W. Bratt, Mr. B. Kreuzer.*

250 GERMAN CIVILIZATION. F, odd years, fine arts core. A study of the German spirit as it finds expression particularly in social customs and institutions, religious and political life, and the fine arts. Lectures and discussions. Prerequisite: 202. *Mr. C. Hegewald.*

301 CLASSICISM. F even years, core. The origins of the classical ideal during the seventeenth and early eighteenth centuries. Readings from Klopstock, Lessing, Goethe, and Schiller. Prerequisite: 202. *Mr. J. Lamse.*

303 ROMANTICISM. S, odd years, core. The literary theory and philosophical-religious basis of the German romantic movement as reflected in representative works of both earlier and later Romanticists. Prerequisite: 202. *Mr. J. Lamse.*

304 REALISM. S even years, core. Readings in the literary prose of the latter half of the nineteenth century. A survey of the intellectual and cultural changes immediately preceding this era and an analysis of some literary works characteristic of the period. Prerequisite: 202. *Mr. C. Hegewald.*

305 NINETEENTH CENTURY DRAMA. F even years, core. A comprehensive study of the lives and works of leading German dramatists of the nineteenth century. Assigned readings and papers. Prerequisite: 202. *Mr. W. Bratt.*

307 EARLY TWENTIETH CENTURY LITERATURE. F, odd years, core. Selected readings in German and Austrian literature from 1890 to 1940, with special emphasis on the works of Hofmannsthal,

Mann, Kafka, Brecht, and Hesse. Lectures, discussions, and assigned papers. Prerequisite: 202. *Mrs. M. J. Lamse.*

308 POSTWAR LITERATURE. S, odd years, core. Readings in German literature from 1945 to the present from such writers as Andersch, Frisch, Böll, and Grass. Seminar papers are required. Prerequisite: 202. *Mrs. M. J. Lamse.*

390 INDEPENDENT STUDY. This course is tailored to meet the needs of the individual student, to enable him to broaden his familiarity with the more important German literary works, and to deepen his understanding of them in tutorial discussions. Prerequisite: approval of the chairman. *Staff.*

395 SEMINAR.

COURSES IN ENGLISH

361 INTRODUCTION TO MODERN GERMAN CULTURE. S, fine arts core for students in designated pre-professional programs. A survey of the German cultural tradition of the past two centuries as it finds expression in the various arts, with particular emphasis on representative works of literature in translation. Open to all students, but planned primarily for those in designated pre-professional courses whose programs include the "foreign culture" option. No knowledge of German is required. *Mr. W. Bratt.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 GERMAN INTERIM ABROAD, *Mr. W. Bratt.*

11 INTRODUCTION TO THEOLOGICAL GERMAN, *Mr. J. Schuurmann.*

122 INTERMEDIATE GERMAN, *Mr. J. Lamse.*

390 INDEPENDENT STUDY, *Staff.*

Greek

SEE THE DEPARTMENT OF CLASSICAL LANGUAGES for a description of courses and programs of concentration in Greek.

History

Professors †R. Bolt, H. Brinks, H. Ippel (chairman), D. Jellema, G. Marsden, M. H. Rienstra, E. Strikwerda, E. Van Kley
Associate Professors B. De Vries, F. Roberts, D. Van Kley, R. Wells
Assistant Professor S. Greydanus

PROGRAMS for students majoring in history will be worked out for them by departmental advisers. Such programs will reflect the student's interests both within the field of history and in related departments, his anticipated vocational goal, and the demands of the historical discipline. A minimum grade of C (2.0) in 101 or 102 is required for admission to major programs. For most programs a proficiency in either French or German is advised. Students are asked to consult with departmental advisers early in their college careers concerning their choice of a foreign language and, if secondary teaching is their goal, concerning the various types of programs leading to certification.

The minimum requirements for a major concentration are nine courses in history including 101, 102, or 102 Honors, the departmental seminar (395), and a program emphasizing either American or European interests. One third-level interim course may be included in the nine courses. The European concentration requires at least three courses from 301-305, at least one course from 310-312, and at least one additional course from 310-312 or from 355 and 356. The American concentration requires at least three courses from 310, 311, 312, 355, and 356 and at least two courses from 301-305. Teacher education programs require two to three courses from both the European and the American sequence with electives from non-western history. A secondary school minor includes 101 or 102, two from 310, 311, or 312 or 211 and one from 355, 356, and 360. The elementary school minor is 101 or 102, 202, 204, 211, 320, and one other. The ideal teaching minor should include the designated courses in both programs. Students seeking special advice on teacher education programs, including group majors for middle school teaching, should consult Mr. S. Greydanus.

The core requirement in history must be met by 101, 102, or 102 Honors; any other regular course in the department will satisfy the additional requirements in the contextual disciplines. History 201, 202, 203, and 204 may be part of a teaching minor in the academic study of religions.

AREA SURVEYS

101 **WESTERN CIVILIZATION.** F and S, core. A study of the main cultural currents of Western Civilization with primary emphasis on the period from an-

tiquity through the sixteenth century.
Staff.

102 **WESTERN CIVILIZATION.** F and S, core. A study of the main cultural currents of Western Civilization with pri-

mary emphasis on the period since the Reformation. *Staff.*

102 HONORS WESTERN CIVILIZATION. F and S, core. An intensive study of particular masterpiece of historical literature, such as Alexis de Tocqueville's *The Old Regime and the French Revolution* or Carl Becker's *The Heavenly City of the Eighteenth-Century Philosophers*. Not a Western Civilization survey in the traditional sense but rather an attempt to communicate an ability to understand, appreciate, and critically evaluate pieces of historical literature. The course requires two or three papers, but no examinations. Enrollment limited to students with 3.3 grade point average or higher. *Staff.*

201 ANCIENT NEAR EAST. F. A cultural history of the ancient Near East from prehistory to the rise of Islam. Based on evidences from archaeology and cultural anthropology as well as on ancient texts in translation, Biblical accounts, and contemporary historical records. Special consideration is given to geographical setting, artistic and linguistic traditions, and cultural contacts with European civilizations. *Mr. B. De Vries.*

202 MODERN NEAR EAST. S. A study of the transformation of the Near East from the rise of Islam through the establishment of independent national states following World War II. Particular attention is given to the institutionalization of Islam, the classical Arab Caliphates, the Crusades, the Ottoman Turkish and Safavid Persian states, the Near East Question, the modernist movements in Islam, and the problems of the contemporary states. *Mr. B. De Vries.*

203 TRADITIONAL EAST ASIA. F. An introduction to the history of East Asian civilizations from the earliest times to the nineteenth century. Primary emphasis is placed on the civilization of China and Japan. Study of the growth and development of traditional East Asian society is supplemented by topical discussions of religion, philosophy, art, music, and literature. *Mr. E. Van Kley.*

204 MODERN EAST ASIA. S. A study of the transformation of East Asian society

resulting from the intrusion of the West, from the sixteenth century to the present. Primary emphasis is placed on the civilizations of China and Japan and on the contacts between East Asia and the West. Topics on East Asian religion, philosophy, art, literature, and music are included. *Mr. E. Van Kley.*

NATIONAL HISTORIES

211 SURVEY OF AMERICAN HISTORY. F and S. Selected themes in American history from colonial times to the present. This course is not intended for those who plan to take period courses in American history. *Mr. R. Bolt, Mr. E. Strikwerda.*

212 ENGLAND. A survey of English history including: the Anglo-Saxon background; the medieval intellectual, religious, and constitutional developments; the Tudor and Stuart religious and political revolutions; the emergence of Great Britain as a world power; the growth of social, economic, and political institutions in the modern period. Not offered 1975-76.

215 CANADA. S. A tracing of the founding and character of New France and a more careful examination of nineteenth and twentieth century Canada. *Mr. E. Strikwerda.*

218 RUSSIA. F. A study of Russian and East European history from Byzantine and Slavic origins through the Russian Revolution of 1917 and the development of the contemporary Soviet state. *Mr. D. Jellema.*

220 THE HISTORY OF FRANCE. A survey of the history of France from the "new monarchy" of Louis XI to the present. Particular attention is given to the religious wars of the sixteenth century, the growth of the French monarchy at the expense of other institutions, the character and influence of the French Enlightenment, the nature and repercussions of the French Revolution, and the causes of France's political decline in the late nineteenth century. Not offered 1975-76.

221 THE NETHERLANDS. S. An introduction to the history of the Netherlands; the medieval times; the Burgun-

dian period; the Reformation; the Dutch "Golden Age"; the French Revolution; the revival of Calvinism during the later nineteenth century; the changing role of the Netherlands in the twentieth century. *Mr. D. Jellema.*

223. **THE HISTORY OF GERMANY.** A survey of German history with particular attention given to the period from the Reformation to the present. Included in the course are: medieval background, the Reformation and its impact on later German developments, the religious wars, intellectual developments of the eighteenth and nineteenth centuries, the movement toward political unity in the nineteenth century, World War I, the Weimar Republic, the rise of the Nazi movement. *Mr. F. Roberts.* Not offered 1975-76.

STUDIES OF HISTORICAL PERIODS

301 **CLASSICAL HISTORY.** F and S. A study of the history of Greece and Rome from the Minoan Age through the reign of the Emperor Theodosius. The emphasis is on the political and economic changes which were the background for the shifts in intellectual styles. Particular problems are studied in depth: the emergence of the city-state; the Periclean age of Athens; the age of Alexander; the crisis of the Roman Republic; and the Decline. The two units of Greek 311 and Latin 312 may be substituted in history concentrations for this one-unit course. *Mr. B. De Vries.*

302 **MEDIEVAL EUROPE.** F and S. A study of European society from 400 through 1350. The broad sweep of political, economic, and intellectual change is focused on the analysis of particular topics, such as the emergence of a Christian society, the rise of Feudalism, the tensions between asceticism and humanism, the Crusades, and the Regnum-Sacerdotium controversy. *Mr. H. Rienstra.*

303 **RENAISSANCE AND REFORMATION EUROPE.** F and S. Studies in topics in European history from 1300 to 1650. Attention to such problems in intellectual history as the nature of humanism, the character of religious reform, and the rise of science. Requires readings in nar-

rative histories and sources. *Mr. F. Roberts.*

304 **EARLY MODERN EUROPE.** F and S. A history of Europe from 1600 to 1815, from the Thirty Years War through the French Revolution, with considerable emphasis on the Age of Reason and Enlightenment. *Mr. D. Van Kley.*

305 **MODERN EUROPE.** F and S. Western Europe from 1815 to 1914. A study of the political and economic phenomena of this century; and examinations of nationalism, liberalism, Darwinism, imperialism, and militarism. *Mr. E. Strikwerda.*

310 **COLONIAL UNITED STATES.** F and S. A study of the colonial origins of the United States from the first settlements to about 1790, with primary emphasis on the intellectual, social, and religious developments and on the European origins of American thought. Attention is given to political, imperial, military, and economic changes. This course is designed to serve as one of the American sequence and as an introduction to History 355, *Intellectual History of the United States.* *Mr. H. Brinks, Mr. G. Marsden.*

311 **NINETEENTH CENTURY UNITED STATES.** F and S. An examination of United States history from the end of the revolutionary era to 1901. Attention is given to the Federalist period, the origins of political parties, Jeffersonian and Jacksonian democracy, sectionalism, slavery, the Civil War and reconstruction, economic expansion and the rise of big business, political corruption and reform, and imperialism. *Mr. R. Wells.*

312 **TWENTIETH CENTURY UNITED STATES.** F and S. A study of politics, diplomacy, labor, industry, and scientific achievement since the 1890's with emphasis on such developments as the Progressive movement, World War I, the retreat from international responsibility; the roaring twenties, the Great Depression, the New Deal, World War II, and domestic and foreign developments since World War II. *Mr. R. Bolt, Mr. H. Brinks.*

320 **CONTEMPORARY WORLD.** F. Western Europe from World War I to the

present; the breakdown of colonialism and the resulting emergence of non-European powers; World War II and its role of changing the balance of power; the Cold War and the era of little wars. Topical studies include: the changing character of world economics; the conflict of ideologies; cultural relativism; the new age of conservatism. *Mr. S. Greydanus.*

TOPICAL STUDIES

334 UNITED STATES CONSTITUTIONAL HISTORY. F. A study of the development of American legal and political traditions using the constitution as the focal point. Emphasis is on such themes as the inter-relationship among the three branches of government and the relationship between legal education and the decisions of the courts. Particular attention is given to the Supreme Court decisions as they have reflected or molded social, intellectual, economic, and political change. *Mr. H. Brinks.* Not offered 1975-76.

351 ENGLISH CONSTITUTIONAL HISTORY. F. A study of the origins and subsequent developments of English law, legal institutions and constitutional usages from 1066 to the present. Major topics considered are: the nature of English constitutional monarchy, the growth of Parliament, the development of English Common Law, the Tudor and Stuart revolutions, the Whig oligarchy, and the significant reforms of modern Britain. *Mr. H. Ippel.*

355 INTELLECTUAL HISTORY OF THE UNITED STATES. F and S. An analysis of the changing intellectual patterns in American society from about 1790 to the present as exemplified in religious, philosophical, political, social, and scientific thought. Emphasis is placed on the interaction of thought and society and some attention is given to European influence on American thought. A general knowledge of American history is assumed. *Mr. G. Marsden.*

356 SOCIAL AND CULTURAL HISTORY OF THE UNITED STATES. S. A study of the development of American society

from 1776 to the present with reference to developments other than those primarily political or intellectual, such as: social reform movements, popular culture, art and architecture, educational developments, the labor movement, immigration, nativism and racism, and urban problems. Prerequisite: a general knowledge of American history. *Mr. R. Wells.*

360 AFRO-AMERICAN HISTORY. S. An intensive inquiry into the role of the Afro-American in the history of the United States, including an evaluation of past and present assumptions of the place of the Afro-American in American life, and an acquaintance with the historiography on this subject. *Mr. S. Greydanus.*

390 INDEPENDENT STUDY. F, I, S. *Staff.*

395 SEMINAR IN HISTORY. F and S, honor sections. A course taught by the staff in historiography, the philosophy of history, historical bibliography, and the writing of history. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 10 BIOGRAPHIES OF BLACK LEADERS, *Mr. S. Greydanus.*
- 11 A TALE OF TWO REVOLUTIONS, *Mr. D. Van Kley.*
- 12 CONFLICT AND CHRISTIANITY IN NORTHERN IRELAND, *Mr. R. Wells.*
- 20 WORLD WAR I AND ITS TITANS, *Mr. E. Strikwerda.*
- 30 THE PICK AND SHOVEL PEOPLE, *Mr. B. De Vries.*
- 31 THE RADICALS OF THE PROTESTANT REFORMATION, *Mr. F. Roberts.*
- 32 WORLD HISTORY IN HISTORY, *Mr. E. Van Kley.*
- 390 INDEPENDENT STUDY, *Staff.*

The following interdisciplinary courses are offered by members of this department.

- 109 DANTE: A STUDY OF THE DIVINE COMEDY, *Mr. H. Rienstra.*
- 117 THE PAST AS PROLOGUE: A CENTURY OF CALVINIST EDUCATION, *Mr. H. Brinks, Mr. D. Oppewal.*

Latin

SEE THE DEPARTMENT OF CLASSICAL LANGUAGES for a description of courses and programs of concentration in Latin.

Mathematics

Professors B. Boonstra, L. Nyhoff, C. Sinke, G. Van Zwalenberg (chairman), †P. Zwier

Associate Professors J. Kuipers, S. Leestma

Assistant Professors D. Brink, T. Jager

FRESHMEN DESIRING TO MAJOR in the department should have completed four years of high school mathematics; those with deficiencies in algebra or trigonometry should complete 101 or 102. A minimum grade of C (2.0) in 211 is required of all students applying for a program of concentration in the department. The program includes 111, 112, 211, 212, 351, three additional courses numbered 300 or above, and one junior-senior level interim course. Students preparing to teach mathematics should complete a nine-course program including the five courses designated above in the general program plus 321, 331, 343 and one junior- or senior-level interim course. The six-course minor for prospective teachers consists of 111, 112, 211, 321, 351, and one additional 300-level course.

A teaching group major in physics and mathematics consists of Mathematics 111, 112, 211, 212, 321, and 351; Physics 123, 124, 225, 226, 381, and 382. A group minor in the same fields consist of Mathematics 111, 112, and 211; Physics 123, 124, 225, and 226. The elementary teacher education adviser is Mr. Clarence Menninga.

Group concentrations combining mathematics with biology, economics, philosophy, or physics are available. Interested students should consult the department chairman.

The core requirements in mathematics may be met by Senior Mathematics in high school or by 109, 111, or 205.

101 ALGEBRA. F and S, half course. Review of elementary algebra; topics in college algebra including inequalities, linear and quadratic functions, and mathematical induction. Intended for those with an inadequate background in high school algebra. Prerequisite: one year of high school algebra. May be taken concurrently with 102. *Staff.*

102 TRIGONOMETRY. F and S, half course. Review of elementary trigonometry, with emphasis on introduction to the trigonometric functions and their properties; trigonometric identities, inverse trigonometric functions. Intended for those who have not had trigonometry in high school or those who wish to review the subject. Prerequisites: one year

- of high school geometry and one year of high school algebra. May be taken concurrently with 101. *Staff.*
- 109 ELEMENTS OF MODERN MATHEMATICS. F and S, core. Set algebra, cardinal numbers, the arithmetic of counting numbers, logic, axiomatic systems, construction of rational and real number systems, groups and fields, relations and functions, polynomials. Prerequisites: one year of algebra in high school. *Staff.*
- 111 CALCULUS AND ANALYTIC GEOMETRY. F and S, honor section, core. Rates of change, limits, derivatives of algebraic functions, applications of the derivative, integration, applications of the integral. *Staff.*
- 112 CALCULUS AND ANALYTIC GEOMETRY. S, honor section. Transcendental and hyperbolic functions, formal integration, analytic geometry, polar coordinates, vectors, parametric equations. Prerequisite: 111. *Staff.*
205. ELEMENTARY ANALYSIS. F and S, core. Real number system; field properties; polynomial, exponential, and logarithm functions and their graphs; elementary differential calculus; rules for differentiation; applications of the derivative to maximum-minimum problems; elementary integral calculus; definite and indefinite integrals; rules for integration; applications of the integral to area problems; some elementary differential equations and application to problems such as population growth. Intended for students other than mathematics and science majors. Prerequisite: Two years of high school mathematics. *Mr. S. Leestma, Mr. C. Sinke.*
- 206 FINITE MATHEMATICS, PROBABILITY AND STATISTICS. S. Sequences including arithmetic and geometric progressions, applications to mathematics of finance; algebra of matrices, applications to solutions of systems of linear equations and linear programming; elementary probability theory, binomial and normal distributions, distribution of sample statistics, statistical inference, regression analysis. Prerequisite: 111 or 205. *Mr. S. Leestma, Mr. C. Sinke.*
- 211 CALCULUS AND ANALYTIC GEOMETRY. F, honors section. Solid analytic geometry, vectors in three dimensions, infinite series, partial derivatives, multiple integrals. Prerequisite: 112. *Staff.*
- 212 LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS. S. Vector spaces, linear transformations, matrices, determinants, other topics from linear algebra; introduction to differential equations. Prerequisite 112. *Staff.*
- 313 TOPICS IN ADVANCED ANALYSIS. F. Fourier series, Laplace transform, series methods in ordinary differential equations, orthogonal functions, vector field theory, and partial differential equations. Intended for engineers, physicists, and others interested in applications of analysis. Prerequisite: 211. *Mr. J. Kuipers.*
- 314 COMPLEX VARIABLES. S. Complex numbers, complex functions, integration and the Cauchy integral formula, power series, residues and poles, conformal mapping. Prerequisite: 211. *Mr. G. Van Zwalenberg.*
- 321 FOUNDATIONS OF GEOMETRY. F. Consideration of Euclidean geometry as an axiomatic system, introduction to non-Euclidean geometry, the Poincaré model. Prerequisite: 112. *Mr. P. Boonstra.*
- 323 LINEAR AND PROJECTIVE GEOMETRY. S. Transformations in the Euclidean plane, review of algebra of vector spaces, affine spaces, projective space, projectives and their groups, cross ratio, theorems of Desargues and Pappus. Prerequisite: 352. *Mr. C. Sinke.*
- 331 HISTORY OF MATHEMATICS. S. A study of the historical development of certain basic mathematical concepts from early times to the present, with consideration of the problems that mathematicians have faced in each age. Prerequisite: 211. *Mr. T. Jager.*
- 341 NUMERICAL ANALYSIS. S. Analysis of errors in numerical methods, real roots of equations, approximations using polynomials, calculus of finite differences, numerical methods for differenti-

ation and integration, applications to differential equations, applications to matrix algebra, inversion of matrices, characteristic values. Prerequisites: Computer Science 107 or 108 and Mathematics 212. *Mr. D. Brink.*

343 **PROBABILITY AND STATISTICS.** F. Probability, probability density functions; binomial, Poisson, and normal distributions; central limit theorem, limiting distributions, sample statistics, hypothesis tests, estimators. Prerequisite: 212. *Mr. C. Sinke.*

351 **ABSTRACT ALGEBRA.** F. Set theory, relations and functions, equivalence relations; the integers, mathematical induction, and elementary number theory; groups, rings, fields, and polynomials. Prerequisite: 211. *Mr. L. Nyhoff.*

352 **ADVANCED LINEAR ALGEBRA.** S. Vector spaces, matrices, linear equations, linear transformations, determinants, polynomial algebras, eigenvalues and eigenvectors, inner-product spaces, spectral decompositions, canonical forms for matrices. Prerequisites: 211. *Mr. L. Nyhoff.*

361 **GENERAL TOPOLOGY.** S. Elementary set theory, topological spaces, separation properties and connectivity, continuous mappings, homeomorphisms, product and quotient spaces, invariants under continuous mappings, compactness, metric spaces and completeness. Prerequisite: 211. *Mr. P. Zwier.* Not offered 1975-76.

362 **REAL ANALYSIS.** F. The real number system, Lebesgue measure and integration, differentiation and integration of real functions, classical Banach spaces, abstract measure theory. Prerequisite: 212. *Mr. T. Jager.*

390 **READINGS IN MATHEMATICS.** F, I, S. Independent study of topics of interest to particular students, under supervision of a member of the department staff. Open to qualified students with permission of the chairman. *Staff.*

395 **SENIOR THESIS IN MATHEMATICS.** F, I, S. The course requirements include an expository or research paper and an oral presentation on a selected topic in mathematics. Open to qualified students with the permission of the chairman. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 10 **MATHEMATICS EDUCATION INTERIM ABROAD,** *Mr. P. Boonstra.*
- 11 **A MATHEMATICAL MORALITY PLAY,** *Mr. T. Jager.*
- 12 **MATHEMATICS IN THE MODERN WORLD,** *Mr. G. Van Zwalenberg.*
- 13 **THE WITCH OF AGNESI — AND HER FRIENDS,** *Mr. J. Kuipers.*
- 20 **GRAPH THEORY,** *Mr. L. Nyhoff.*
- 30 **MINDS, MACHINES, AND GÖDEL,** *Mr. P. Zwier.*
- 390 **INDEPENDENT STUDY,** *Staff.*

Music

Professors J. Hamersma (chairman), H. Slenk, D. Topp
Associate Professors J. De Jonge, H. Geerdes, C. Stapert, J. Worst
Assistant Professor G. Huisman
Professional Staff T. Knol, R. Rus

STUDENTS must complete 103, 104, 121, and 123 with a minimum average of C (2.0) before applying for admission to a major concentration in music. In addition, those interested in teacher certification must consult **Mr. Topp.**

The recommended program for students preparing for graduate study is 103, 104, 121, 122, 123, 124, 131, 132, 203, 204, 223, 224, 303, 304, 199-200 each semester, participation each semester in an appropriate faculty-directed ensemble, and four courses from one of the following areas: *music history*—205, 206, 305, 306, or approved interim courses; *theory and composition*—205, 206, and any two from 315, 316, 407, 408, or approved interim courses; *applied music*—four courses of individual instruction in a single instrument or voice culminating in a solo recital.

Students desiring a certificate to teach music from the kindergarten through the secondary level should complete the following fifteen-course concentration: 103, 104, 121, 122, 123, 124, 203, 204, 223, 224, 303, 304, 313, 199-200 each semester, participation each semester in an appropriate faculty-directed ensemble, and the completion of one of the following programs in either instrumental or vocal music, *Instrumental music* requires 315, 329, 330; one elective from 205, 206, 220, 305, 306, 316, or 407; four semesters of instruction in a single string or wind instrument; and the completion of the ensemble requirement by 213-214 or 215-216. *Vocal music* requires 117, 118, 131, 132, 217, 218, 109-110 or 141-142; 205 or 206; 305 or 306; and one additional course from advanced courses (205, 206, 220, 305, 306, 315, 407) or from advanced interim courses; and the completion of the ensemble requirement by 107-108 or 207-208. The liberal arts core automatically provides a humanities minor for students in these programs. The professional education requirements are met by Psychology 204 and Music 331 instead of Education 301 and 303.

A nine-course major for students in the elementary education program consists of 103, 104, 121, 122, 123, 124, 203, 302, 313, 331, 199-200 each semester and completion of one of the following programs in either vocal or instrumental music. *Vocal music* requires two semesters of participation in 107-108 or 207-208, 117, 118, 141, 142, and one advanced elective, or an advanced interim. *Instrumental music* requires 329, 330, and two semesters study on a single wind or string instrument. In addition, 213, 214, 215, and 216 are highly recommended. For group majors involving music, see page 50. If a student does at least part of his teaching internship at the junior high school level, his teaching certificate will indicate that he is certified to teach music at both the elementary and secondary levels.

A suggested minor in music education includes 103, 104, 203, 302, 313, 331, and two semesters of individual lessons in piano, organ, or voice, or two semesters of participation in some faculty-directed ensemble. Those in elementary education may substitute 222 for 331.

A nine-course major concentration is possible for students not expecting to teach or to enter graduate school. The recommended program is

103, 104, 121, 122, 123, 124, 203, 302 (or 204, 303, and 304 in lieu of 302), the total of one course credit in applied music (excluding 329 and 330), 199-200 each semester, with electives chosen from 131, 132, 205, 206, 219 or 220, 223, 224, 305, 306, 313, 316, 407, 408, an approved interim, or additional work in individual lessons not to exceed one course.

Transfer students at the beginning of their first semester at Calvin College must validate their transfer credit by means of examinations; in keyboard harmony with Mrs. Thelma Knol and in aural perception with Mr. Howard Slenk.

All music majors must complete the Princeton Comprehensive Music Examination during the April of the spring in which they enroll for 302 or 304. The test is administered by Mr. J. Worst.

The fine arts core requirement is normally met by 211 or 212 but may be met by any of the following courses: 103, 211, 212, 219, 301, 302, and 326.

BASIC COURSES

103 THE VOCABULARY, LITERATURE, AND MATERIALS OF MUSIC. F, core. An introduction to the art of music by means of a consideration of the elements of music as observed in a select repertory of works from the Middle Ages to the present. The fine arts core requirement is usually met by 211 or 212. Students intending to major in music must take 121 and 123 concurrently. *Miss T. Huisman, Mr. H. Slenk.*

104 THE LITERATURE AND MATERIALS OF MUSIC. S. A continuation of 103. A coordinated study of the historical, theoretical, and practical aspects of music by means of lectures, score study, written exercises, listening, performance, and reading. A study of the music of the Middle Ages. Students intending to major in music must take 122 and 124 concurrently. Prerequisite: 103. *Miss T. Huisman, Mr. C. Stapert.*

121-122 KEYBOARD HARMONY, ELEMENTARY. F and S, quarter course. Class instruction in piano will be required concurrently for students failing to meet departmental piano requirements. To be taken simultaneously with Music 103-104. *Mrs. T. Knol.*

123-124 AURAL PERCEPTION, ELEMENTARY. F and S, quarter course. A course in the development of the ability

to hear and grasp the rhythmic, melodic, and harmonic elements of music. To be taken simultaneously with Music 103-104. *Mr. H. Slenk.*

131-132 KEYBOARD HARMONY, ADVANCED. F and S, quarter course. Continuation of 121-122. To be taken simultaneously with music 203-204. Prerequisite: 121-122. *Mrs. T. Knol.*

203 THE LITERATURE AND MATERIALS OF MUSIC. F. A continuation of 104. An introduction to tonal counterpoint. A study of the music of the Baroque era. Students intending to major in music, excepting concentrators in instrumental music education, must take 131 and 223 concurrently. Prerequisite: 104. *Mr. C. Stapert.*

204 THE LITERATURE AND MATERIALS OF MUSIC. S. A continuation of 203. A study of the materials of traditional harmony. The study of the music of the Classic period. Students intending to major in music, excepting concentrators in instrumental music education, must take 132 and 224 concurrently. Prerequisite: 203. *Miss T. Huisman.*

223-224 AURAL PERCEPTION, ADVANCED. F and S, quarter course. Continuation of 123-124. To be taken simultaneously with Music 203-204. Prerequisite: 123-124. *Mr. H. Slenk.*

303 THE LITERATURE AND MATERIALS OF MUSIC. F. A continuation of 204. Completion of the study of the materials of traditional harmony. A study of the music of the Romantic period. Prerequisite: 204. *Mr. J. Worst.*

304 THE LITERATURE AND MATERIALS OF MUSIC. S. A continuation of 303. A study of post-romantic and contemporary music. The class presents a concert of contemporary and *avant garde* music in early May. Prerequisite: 303. *Mr. J. Worst.*

ADVANCED COURSES

205 VOCAL POLYPHONY OF THE RENAISSANCE. F even years. A study of the vocal works of sixteenth century composers, especially Josquin, Lassus, Palestrina, Victoria, Byrd, Hassler, and Gibbons. Exercises in modal counterpoint. Singing and drill in aural perception. Listening repertory of compositions. Prerequisite: 104. *Mr. C. Stapert.* Not offered 1975-76.

206 INSTRUMENTAL AND VOCAL POLYPHONY OF THE LATE BAROQUE. S odd years. A study of contrapuntal practice of late Baroque composers, principally J. S. Bach. Exercises in tonal counterpoint. Listening repertory of compositions. Prerequisite: 203. *Mr. H. Slenk.*

220 CHURCH MUSIC. I, S odd years. A study of the worship music of the major Christian traditions in relation to their liturgies. Principles of appropriate worship music are discussed in the light of the history of church music. Prerequisite: 204. Not offered 1975-76.

305 MUSIC OF THE CLASSICAL PERIOD. F odd years. A study of the principal forms of the Classic period from the keyboard music of Couperin, K.P.E. Bach, and Scarlatti through the major works of Haydn and Mozart to the late works of Beethoven. Analytic score studies of representative works. Listening repertory of compositions from the period. Several short papers. Prerequisite: 204 or 203 and 302 or permission of instructor. *Mr. C. Stapert.*

306 MUSIC OF THE ROMANTIC PERIOD. S even years. A study of the principal forms of the Romantic period from Shu-

bert and Schumann through Wagner. Analytic score studies of representative works. Listening repertory of compositions. Several short papers. Prerequisite: 303 or 203 and 302 or permission of instructor. Not offered 1975-76.

315 ARRANGING, ORCHESTRATION, AND SCORING. S. Survey of the history of the orchestra and orchestration, and problems involved in writing for orchestra, band, and stage band. A survey of the technical limitations of each instrument and the human voice. Projects written by class members will be performed by department organizations whenever practicable. Prerequisite: 104. *Mr. J. Worst.*

316 ARRANGING, ORCHESTRATION, AND SCORING. S. Continuation of 315, which is prerequisite. Not offered 1975-76.

407 COMPOSITION. F. Writing in contemporary forms and according to contemporary practice. Prerequisite: 104 or permission of the instructor. *Mr. J. Worst.*

408 COMPOSITION. S. A continuation of 407. Prerequisites: 407 and permission of the instructor. *Mr. J. Worst.*

GENERAL COURSES

211 AN INTRODUCTION TO MUSIC LITERATURE. F, core. For students with limited musical background who are interested in increasing their knowledge and enjoyment of music. The emphasis is on intelligent and perceptive listening. This year the course will concentrate on music from the Baroque and Classical periods. Listening, term paper, concert attendance. No prerequisite. *Mr. J. De Jonge.*

212 AN INTRODUCTION TO MUSIC LITERATURE. S, core. A course similar to 211 but with different content. Includes the music of representative composers of the Romantic and Modern-Contemporary Periods. Listening, term paper, concert attendance. No prerequisite. *Mr. J. De Jonge.*

219 CHURCH MUSIC. I, F odd years, core. A historical survey of the worship music of the Hebrews, early Christian church, the Roman church, and the

churches of the Reformation. Principles of appropriate worship music are discussed in the light of the history of church music. No prerequisite. Recommended for pre-seminary students. Not offered 1975-76.

301 HISTORY OF MUSIC. F, core. A study of the art of music from its origins through the Baroque. Score studies, listening repertory, and reading. Not offered 1975-76.

302 HISTORY OF MUSIC. S, core. A study of the art of music from Bach to the present. Score studies, listening repertory, and reading. *Mr. C. Stapert.*

313 CONDUCTING. F and S, half course. A course in basic, general conducting leading to the conducting of either instrumental or choral literature. Two hours of class and two hours of conducting laboratory per week. Should be taken by instrumental music education majors, nine-course majors, and music minors during the spring semester of their sophomore year and by fifteen-course vocal music education majors during the fall semester of their junior year. Prerequisite: 104. *Mr. H. Geerdes, Mr. H. Slenk.*

326 CHAMBER MUSIC. F odd years, core. A general course designed to provide the historical and musical background necessary for perceptive listening to music for small ensembles. The Cayvan Collection of recordings and scores will be used to give the student an insight into music written for trios, quartets, and quintets of string or wind instruments. Not offered 1975-76.

MUSIC EDUCATION

222 ELEMENTARY SCHOOL MUSIC. F and S. A study of the content and methods for teaching music in the elementary school classroom. Includes consideration of philosophy and materials. This course is recommended for elementary education students. (Music 331 is required of elementary music education majors). *Miss T. Huisman, Mr. D. Topp.*

331 SCHOOL MUSIC. S. A study of the philosophy, methods, and materials for teaching elementary and secondary school music with emphasis upon research, planning, and teaching. This

course is required of secondary music education majors (who substitute this course and Psychology 204 for Education 301 and 303), music minors, and elementary music education majors, and is also open to elementary education majors with a background in music. *Mr. D. Topp.*

APPLIED MUSIC

INDIVIDUAL LESSONS

Students enrolling in any course in this section must also register for 199-200.

109-110, 209-210, 309-310, 409-410 ORGAN. Quarter course. Individual lessons in organ. *Mr. J. Hamersma and Staff.*

109c-110c, 209c-210c, 309c-310c, 409c-410c ORGAN. Half course. Individual lessons for the music major concentrating in organ. *Mr. J. Hamersma.*

117-118, 217-218, 317-318, 417-418 VOICE. Quarter course. Individual lessons in voice. *Mr. J. De Jonge.*

117c-118c, 217c-218c, 317c-318c, 417c-418c VOICE. Half course. Individual lessons for the music major concentrating in voice. *Mr. J. De Jonge.*

141-142, 241-242, 341-342, 441-442 PIANO. Quarter course. Individual lessons in piano. *Mrs. R. Rus, Mrs. T. Knol.*

141c-142c, 241c-242c, 341c-342c, 441c-442c PIANO. Half course. Individual lessons for the music major concentrating in piano. *Mrs. R. Rus, Mrs. T. Knol.*

161-162, 261-262, 361-362, 461-462 STRINGS. Quarter course. Individual lessons in violin, viola, violoncello, or bass viol.

161c-162c, 261c-262c, 361c-362c, 461c-462c STRINGS. Half course. Individual lessons for the music major concentrating in violin, viola, violoncello, bass viol, or classical guitar.

171-172, 271-272, 371-372, 471-472 WOODWINDS. Quarter course. Individual lessons in flute, oboe, clarinet, bassoon, or saxophone.

171c-172c, 271c-272c, 371c-372c, 471c-472c WOODWINDS. Half course. Indi-

dual lessons for the music major concentrating in flute, oboe, clarinet, bassoon, or saxophone.

181-182, 281-282, 381-382, 481-482
BRASSES. Quarter course. Individual lessons in cornet, horn, baritone, trombone, or bass horn.

181c-182c, 281c-282c, 381c-382c, 481c-482c
BRASSES. Half course. Individual lessons for the music major concentrating in cornet, horn, baritone, trombone, or bass horn

191-192, 291-292
PERCUSSION. Quarter course. Individual lessons in snare drum, tympani, and other percussion instruments.

CLASS LESSONS

199-200
REPERTORY CLASS AND STUDIO CLASSES. F and S, no credit. Performance classes for students of applied music for the purpose of gaining experience in public performance and increasing knowledge of music literature. Attendance is required of all music majors and students registered for individual lessons in applied music. *Staff.*

329
STRINGS AND BRASSES. F odd years. Class lessons in string and brass instruments for the music major concentrating in instrumental music education and others wishing to learn a secondary instrument. *Mr. H. Geerdes.*

330
WOODWINDS AND PERCUSSION. F even years. Class lessons in woodwind and percussion instruments for the music major concentrating in instrumental music education and others wishing to learn a secondary instrument. *Mr. H. Geerdes.* Not offered 1975-76.

ENSEMBLES

101-102
ORATORIO CHORUS. No credit. The study of representative works of the great masters of choral writing with a view to public performance. Handel's *Messiah* is performed annually at Christmas time and another oratorio is presented in the spring. Open to all who meet the requirements of voice and musicianship. One rehearsal a week. *Mr. H. Geerdes.*

107-108
CAMPUS CHOIR. Quarter course. Representative works in the field of choral literature are studied and sung. Emphasis given to the development of singing and sight-reading skills as well as to regular performances. Open to music majors and others who meet the requirements of voice and musicianship. *Mr. M. Mustert.*

113-114
STUDIO LAB BAND. No credit. Representative works from traditional, contemporary, and experimental jazz and rock music are studied and prepared for public performance. Open to a limited number of instrumentalists who meet the demands of musicianship. Does not meet the music major ensemble requirement.

207-208
CAPELLA. Quarter course. Representative works in the field of choral literature are studied and a limited number of selections are prepared for concert performance. Membership is maintained at a set limit and is open only to those who meet the demands of voice, sight reading, and choral musicianship. *Mr. H. Slenk.*

213-214
CONCERT BAND. Quarter course. Representative works in the field of band literature are studied and prepared for concert performance. Open to all students who met the demands of musicianship. Three rehearsals a week. *Mr. J. Worst.*

215-216
ORCHESTRA. Quarter course. Representative works in the field of chamber and symphony orchestra literature are studied and prepared for concert performance. Open to all students who meet the demands of musicianship. One full orchestra rehearsal per week, plus one string orchestra rehearsal. *Mr. H. Geerdes.*

307-308
COLLEGIUM MUSICUM. Quarter course. Music for small instrumental and/or vocal ensembles from all periods is studied and performed. This is an honors ensemble open to singers and instrumentalists who also participate in the choir, band, or orchestra. It is also open to keyboard, woodwind, and brass instrumentalists who are interested in performing on old wind and keyboard in-

struments and who meet the demands of musicianship. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 10 PIANO PEDAGOGY, *Mrs. T. Knol.*
- 11 PRAISE HIM WITH THE TRUMP THAT SWINGS? *Mr. J. Hamersma, Mr. C. Stapert.*
- 30 TEACHING SOCIAL STUDIES THROUGH FOLK MUSIC, *Mr. D. Topp.*

- 31 MUSIC IN THE UNITED STATES, *Mr. H. Slenk.*
- 390 INDEPENDENT STUDY, *Staff.*

The following interdisciplinary courses are also offered by members of this department.

- 105 MUSIC IN RECREATION AND LEISURE, *Mrs. D. Hageman, Miss G. Huisman.*
- 106 MUSICAL THEATER, *Mrs. E. Boevé, Mr. J. Worst.*
- 123 NOISE AND MAN, *Mr. H. Geerdes, Mr. M. Vande Guchte.*

Philosophy

Professors *P. De Vos, C. Orlebeke (chairman), *R. Mouw, *A. Plantinga, E. Runer, N. Wolterstorff*
Associate Professor **K. Konyndyk*
Assistant Professors *G. Mellema, E. Wierenga*
Instructors *G. Mulenburg, H. Schuurman*

BEFORE APPLYING for admission to a major program a student must have completed either 151 or 153 with a minimum grade of C (2.0). The program of concentration requires eight courses including one course in logic, two courses in Perspective in Philosophy (151-152), two historical period courses (210, 220, 230, 240), one historical figure or movement course, and two courses in systematics, including one from the advanced level. Students may also meet the departmental requirements by completing Introduction to Philosophy (153) and an intermediate-level systematics course instead of 151-152, provided the historical period courses are chosen from 210, 220, and 230. A four-unit cognate sequence approved by the student's adviser is required in another department.

Philosophy 204, 205, and 207 may be a part of the teaching minor in the academic study of religions.

If a student wishes to present one course toward the core requirement in philosophy, it should be 153. If he wishes to present two courses, they should be: 151 and 152; 153 and either 171 or 173; 153 and any intermediate level course; or, if he is in teacher education, 153 and Education 304.

ELEMENTARY COURSES

151 and 152 PERSPECTIVES IN PHILOSOPHY. F and S. A year-long introduction to philosophy which aims to give the student a Christian philosophical frame-

work for his thinking, along with some awareness of important alternative philosophical frameworks (philosophical perspectives), and of important alternative answers to some of the fundamental

problems. It also claims to give the student some sense of the history of philosophy. 151 is a prerequisite to 152. *Staff*.

153 INTRODUCTION TO PHILOSOPHY. F and S. A one-semester introduction to philosophy, with fundamentally the same aims as the Perspectives in Philosophy course, except that it will not aim to acquaint the student with the history of philosophy. *Staff*.

171 INTRODUCTION TO LOGIC. S. A course in elementary deductive and inductive logic with emphasis upon the use of logic in evaluating arguments. Suitable for freshmen; not recommended for students majoring in philosophy. *Mr. G. Mulenburg*.

173 INTRODUCTION TO SYMBOLIC LOGIC. F. A course in elementary symbolic logic, including some modal logic. This course is designed for students majoring in philosophy, science, and mathematics. Open to qualified freshmen. *Mr. G. Mellema*.

INTERMEDIATE SYSTEMATIC COURSES

All intermediate courses presuppose one course in philosophy.

203 PHILOSOPHY OF SCIENCE. F. A study of philosophical problems arising out of the methods and results of modern science. *Mr. G. Mellema*.

204 PHILOSOPHY OF RELIGION. F. A study of some philosophical questions arising from religious belief. *Mr. E. Wierenga*.

205 ETHICS. F and S. A course designed to deal both historically and situationally with the persistent problems of the moral life. *Mr. E. Wierenga*.

206 PHILOSOPHY OF HISTORY. S. An examination of several topics in both the speculative and analytical philosophy of history. Some consideration will be given to individual thinkers such as St. Augustine, Hegel, and Collingwood, but the course will be structured around questions of the nature and meaning of historical knowledge. *Mr. M. H. Rienstra*.

207 POLITICAL AND SOCIAL PHILOSOPHY. S. A systematic study of the problems of social and political thought, historically oriented, with emphasis on

political and social ideals, such as political and social justice; equality and the law; the basis of social and political authority; rights and obligations. *Mr. P. De Vos*.

208 AESTHETICS. F. A study of the nature of art and aesthetic judgments. *Mr. N. Wolterstorff*.

209 PHILOSOPHY OF EDUCATION. A study of the nature, aims, and principles of education. Not offered 1975-76.

INTERMEDIATE HISTORICAL COURSES

All intermediate courses presuppose one course in philosophy.

210 HISTORY OF ANCIENT PHILOSOPHY. F. A history of philosophy in the Greek and Hellenistic periods. *Mr. C. Orlebeke*.

220 HISTORY OF MEDIEVAL PHILOSOPHY. F. A history of philosophy from Augustine to the Renaissance. *Mr. H. Schuurman*.

230 HISTORY OF MODERN PHILOSOPHY. F and S. A study of selected philosophies of the seventeenth and eighteenth centuries. *Mr. P. De Vos, Mr. C. Orlebeke*.

240 HISTORY OF CONTEMPORARY PHILOSOPHY. S. A study of major movements in recent and contemporary Anglo-American philosophy. Preparation in the history of philosophy is strongly recommended. *Mr. G. Mulenburg*.

243 AMERICAN PHILOSOPHY. S. A critical study of major movements in the history of American philosophy with special emphasis on the pragmatism of Peirce, James, and Dewey. Not offered 1975-76.

ADVANCED HISTORICAL COURSES

All advanced courses presuppose at least two courses in philosophy, normally two courses from the intermediate historical group including 230.

312 PLATO AND ARISTOTLE. S. Advanced study of Plato and Aristotle. Not offered 1975-76.

331 KANT. S. A study of the *Critique of Pure Reason*. *Mr. H. Schuurman*.

333 KIERKEGAARD. F. *Mr. T. Prins*.

335 **NINETEENTH CENTURY PHILOSOPHY.** S. A study of the major figures in nineteenth century continental European philosophy. *Mr. E. Runner.*

340 **TWENTIETH CENTURY CONTINENTAL PHILOSOPHY.** S. A study of major figures in recent phenomenology and existentialism. Suggested preparation: 335. *Mr. E. Runner.*

ADVANCED SYSTEMATIC COURSES

All advanced courses presuppose at least two courses in philosophy, normally two courses from the intermediate historical group.

371 **EPISTEMOLOGY.** S. A study of the nature, sources, types, and limits of human knowledge. *Mr. G. Mellema.*

375 **PHILOSOPHICAL ANTHROPOLOGY.** F. A critical examination of major philo-

sophical discussions of the nature of man, with special attention to the concepts of mind, body, action, soul, and immortality. *Mr. G. Muilenburg.*

381 **ADVANCED LOGIC.** S. Topics include the formalization of propositional and quantificational logic. Not offered 1975-76.

390 **READINGS AND RESEARCH.** F, I, S. Prerequisite: permission of chairman. *Staff.*

395 **ONTOLOGY.** S. A study of selected topics of ontology. *Mr. E. Wierenga.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

11 **NEO-KUYPERIANISM,** *Mr. E. Runner.*

390 **INDEPENDENT STUDY,** *Staff.*

Physical education

Professors B. Steen, M. Zuidema (chairman)

Assistant Professors R. Honderd, J. Timmer, D. Tuuk, D. Vroon, D. Zuidema

Assistant Instructors D. Hageman, K. Hoesch

The department serves dual functions — it provides a required but flexible two-year sequence of physical education for all students; it also offers professional training for physical education teachers and coaches.

Admission to the professional concentration, which also satisfies the certification requirements for teaching at both the elementary and secondary level, requires the approval of the department chairman. The nine-course program includes 201, 212, 215, four courses from the 230 series, 301, 302, 380, and Biology 115. Physical Education 221 is also required and may be substituted for one quarter-course in basic physical education or for one of the 230 courses. The six-course teaching minor includes three quarter-courses from 100-199, 201, 212, 221, 302, 380 as a half course, and Biology 115.

BASIC PHYSICAL EDUCATION COURSES

The Basic Physical Education program is part of the liberal arts core and consists of an initial personal inventory (101) followed by four quarter courses (normally three from 120-198 plus 199). Veterans with two or more years of military experience will be exempted from the core requirements in physical education if they present discharge papers at the Registrar's Office.

All students must register for PE 101 (Diagnosis-Classification) as their first physical education course. The first four weeks of this course are devoted to a diag-

nostic inventory to determine fitness, skills, understanding of physical education, psycho-social needs, and recreational goals. On the basis of the results, the student and his instructor plan an appropriate sequential program of courses including fitness and skill developmental activities, aquatics, and recreational sports. Older or handicapped students typically satisfy the requirements with courses from the Adaptive Program (110). All students must register for Physical Fitness (199) as the fourth quarter course in the sequence.

Physical Education majors and minors and elementary education students may substitute 221 for one quarter course in basic physical education (110-198).

101 **DIAGNOSIS-CLASSIFICATION.** F and I, non-credit. This course substitutes for the first four weeks of the student's first basic physical education course. Each student undergoes a thorough diagnostic inventory to assist him and his instructor in planning an appropriate program of college physical education for the student. *Staff.*

110 **ADAPTIVE PROGRAM.** F, I, and S, quarter course. This is a specialized program for older students and those with physical handicaps whose needs cannot be met in the regular programs (120-198). Adaptive and corrective activities are developed for each student. Students are assigned to regular activities or special programs. The college physician is consulted in the cases of physically handicapped students. Students who are eligible for this course should consult the departmental representative at registration. The course may be repeated. *Mr. M. Zuidema.*

120-159 **GUIDED INSTRUCTIONAL PROGRAM.** F, I, and S, quarter courses. Various developmental and recreational courses planned to develop one or more aspect of personal efficiency are offered. Examples of such courses are: physical conditioning, weight training, motor training, rhythmic, wrestling, gymnastics, badminton, bowling, tennis, golf, handball, paddleball, and volleyball. Up to three quarter courses may be taken in this program. *Staff.*

160-198 **SPECIALIZED INSTRUCTIONAL PROGRAM.** F, I, and S, quarter course. Specific courses are developed with a departmental representative and may include, among others, aerobic fitness, individual and group experience in creative movement expression, and programmed learning in self-defense, skiing, cycling, or mountain climbing. Such programs

may be arranged by individuals or groups and for more advanced students may include instructional clubs in various leisure time sports. Up to three quarter courses may be taken in this program. *Staff.*

199 **PHYSICAL FITNESS.** F and S, quarter course. This course is the final one in the basic physical education sequence and, accompanied by a review of the results of the student's initial personal inventory, aims to give him a basis for maintaining life-long physical fitness. Students must meet programmed fitness standards or engage in fitness building programs until they can meet such standards. *Staff.*

221 **ELEMENTARY SCHOOL ACTIVITIES AND PROGRAMS.** See description under Professional Courses.

PROFESSIONAL COURSES

201 **HISTORY AND PERSPECTIVE.** F. The course deals with two areas—the history of physical education in the civilized world, and the problems, purposes, and philosophical implications of physical education as they affect man in general and educational institutions in particular. *Mr. B. Steen.*

212 **KINESIOLOGY.** F. A study of human motion from the scientific standpoint. Particular attention is given to a mechanical analysis of musculoskeletal movements as applied to games, sports, and daily living. Prerequisite: Biology 115. *Mr. R. Honderd.*

215 **PHYSIOLOGY OF PHYSICAL ACTIVITY.** S. A study of physical efficiency and physiological principles involved in human exercise. Emphasis will be placed on the responses of the respiratory, cardiovascular, and muscular systems. The course includes the physiology of factors

affecting performance such as the environment and the use of tobacco, alcohol, and drugs. Prerequisite: Biology 115. *Mr. J. Timmer.*

221 **ELEMENTARY SCHOOL ACTIVITIES AND PROGRAMS.** F and S, half course. The course provides a working knowledge of the fundamentals of physical education planning for elementary school children. It substitutes for one quarter course in basic physical education (110-198) for physical education majors and minors, and for elementary teacher education students. *Miss D. Hageman, Miss K. Hoesch, Mr. M. Zuidema.*

230-239 **THE TEACHING AND COACHING OF ACTIVITIES.** Half course. Students with a major concentration in physical education must combine various courses to total the required two-course credit. Prerequisite: a record of participation in skill performance or completion of the same activity in 380. Students must complete Laboratory A and Laboratory B while registered for their first two courses in the 230 series.

LA **Motor Learning Principles.** Mr. M. Zuidema.

LB **Psychology of Teaching/Coaching.** Mr. B. Steen.

230 **Field Hockey.** S. Mrs. D. Hageman.

231 **Basketball.** F. Mr. R. Honderd.

232 **Baseball/Softball.** S. Mr. M. Zuidema.

233 **Track and Field.** S. Mr. D. Tuuk.

234 **Soccer.** F. Mr. M. Zuidema.

235 **Volleyball/Tennis.** F. Miss K. Hoesch.

236 **Football.** F. Mr. J. Timmer.

237 **Gymnastics.** S. Staff.

238 **Wrestling.** S. Staff.

301 **MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION.** S. A study of the evaluation techniques in physical education. Emphasis on evaluation of physical fitness, body mechanics, growth, motor ability, sport skills, knowledge of health practices and sports activities, and program evaluation. Consideration is given to the organization of evaluation programs and the use of such programs. The course gives opportunity for practical experience in administering tests. *Mr. M. Zuidema.*

302 **ORGANIZATION OF THE CURRICULUM AND PROGRAMS OF PHYSICAL EDUCATION.** S. A study of the structure and curricula of modern physical education programs of elementary and secondary schools and the closely-related areas of administration of athletics, intramurals,

recreation, and health programs. Opportunity is given to construct total programs of physical education for selected schools. *Mr. B. Steen.*

303 **LEADERSHIP IN RECREATION PROGRAMS.** S, half course. This course studies the organization of recreation programs and gives opportunity for observing programs in action, for structuring new programs, and for developing leadership skills. *Mr. D. Tuuk.*

312 **PHYSIOLOGY OF CONDITIONING AND INJURIES.** F, half course. The study of physiological principles as they apply to physical training and rehabilitation from injury. Specific types of training programs are studied. Laboratory topics will include athletic injury treatment, taping techniques, and first aid procedures. Prerequisite: Biology 115. *Mr. J. Timmer.*

380 **INDIVIDUAL COMPETENCES.** F, I, and S, full or half course. This course offers opportunity for physical education majors and minors to develop the physical condition and skill necessary to be beginning teachers in physical education. It requires active participation and competence in a variety of physical education skills. Students should register for this course when they are admitted to a major or minor in the department and remain registered for it until they have completed the other departmental requirements. Majors, who need a full course credit, must earn 210 points and minors, who receive a half course credit, must earn 105. Periodic competency examinations are given. Elements of this course are prerequisites for 230 courses. *Mr. B. Steen, Mr. D. Vroon.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

13 **SPORTS AND THE MEDIA,** Mr. D. Vroon.

30 **RESEARCH AND INSTRUMENTATION IN STRESS PHYSIOLOGY,** Mr. J. Timmer.

390 **INDEPENDENT STUDY,** Staff.

The following interdisciplinary course is also offered by a member of this department.

105 **MUSIC IN RECREATION AND LEISURE,** Mrs. D. Hageman, Miss G. Huisman.

Physics

Professors V. Ehlers (chairman), R. Griffioen, A. Kromminga, C. Menninga, H. Van Till

Associate Professor J. Van Zytveld

STUDENTS intending to major in physics are advised to enter college with four years of mathematics and to take their basic courses in mathematics (Mathematics 111, 112, 211, 212) and physics (Physics 123, 124, 181, 182, 225, 226) during their freshman and sophomore years. Computer Science 108 is also recommended for the freshman year. Students may apply for admission to the department before completing 226 and Mathematics 212, but they must have completed the designated courses with a minimum average grade of C (2.0) before they can be admitted to the major program.

The major program of concentration in physics includes, in addition to the introductory courses, 335, 345, 346, 375, 376, 380 or 381, and 382 or an interim course in Modern Physics Laboratory. Students planning to do graduate work in physics should also take 379, 395 and 396 or an interim course in research, and Mathematics 313.

The major program of concentration in physics for secondary education students requires a minimum of nine college courses, including Philosophy 203, Physics 123, 124, 181, 182, 225, 226, 380 or 381, 382 or an interim course in Modern Physics Laboratory, plus approved electives from the Advanced Courses. The minor program for secondary education students requires 123, 124, 181, 182, 225, 226, 380 or 381, 382 or an interim course in Modern Physics Laboratory, plus approved electives from Advanced Courses.

The teaching group major in physics and mathematics consists of Mathematics 111, 112, 211, 212, 321, and 351; Physics 123, 124, 181, 225, 226, 381, and 382. A group minor in the same fields consists of Mathematics 111, 112, and 211; Physics 123, 124, 181, 225, and 226. The elementary teacher education adviser is Mr. Clarence Menninga.

The teaching group major in physics and chemistry consists of Physics 123, 124, 181, 225, 226; Chemistry 103, 104, and either 253-254 or 301-302; and two and a half courses approved by the Science Division Education Coordinator, Mr. Clarence Menninga. Courses recommended for such electives include Physics 381, 382, Chemistry 201, 277, and 278.

The physical science core requirement may be met by a year of high school physics, by 110, 112, 123, 222, 225, Chemistry 104, Astronomy 110, Geology 252, and interim courses in physics and chemistry which are designated as satisfying the core.

INTRODUCTORY COURSES

110 **PHYSICAL SCIENCE.** F and S, core.

This course evaluates the basic assumptions used in the scientific study of nature, discusses the methods of scientific investigation and the development of scientific theories, and presents the results of scientific investigations in the fields of physics and chemistry. It also acquaints students with the fundamental laws of physics and chemistry and explains certain important physical phenomena. This course is designed primarily for non-science majors and is not open to those who have taken (or plan to take) Physics 112, 123, 126, or 221. Prerequisites: high school algebra and Mathematics 109 or its equivalent. *Staff.*

112 **PHYSICAL SCIENCE.** F and S, one and a half courses, core. The major objectives of this course are the same as those of 110 except that a laboratory-oriented approach is used to achieve the objectives. Emphasis is placed on the processes and structure of science. The course is open only to future elementary school teachers and makes use of elementary school science programs and materials. Not open to those who have taken or plan to take 110, 123, 126, or 221. Prerequisites: high school algebra and Mathematics 109 or their equivalent. *Mr. V. Ehlers.*

123 **INTRODUCTION TO MODERN AND CLASSICAL PHYSICS.** F, core. This course, along with 124, which is its continuation, serves as an introduction to both classical and modern physics for students planning to major in science or mathematics. Mathematically qualified students are encouraged to satisfy the core requirement with 123 rather than with 110. Topics in classical physics include mechanics and thermodynamics. In the area of modern physics, topics such as nuclear properties will be discussed. The nature of scientific study in general and its place in one's world and life view will be discussed. Concurrent registration in (or completion of) Mathematics 111 is required. *Mr. J. Van Zytveld.*

124 **INTRODUCTION TO MODERN AND CLASSICAL PHYSICS.** S. A continuation of 123, which is a prerequisite. Prerequisite: Mathematics 111 and concurrent

registration in Mathematics 112. *Mr. J. Van Zytveld.*

126 **INTRODUCTORY PHYSICS: MECHANICS AND HEAT.** S. An introduction to classical Newtonian mechanics applied to linear and rotational motion; a study of energy and momentum and their associated conservation laws; an introduction to the concept of heat and a study of the first and second laws of thermodynamics. This course serves as a preparation for 225 and is intended primarily for engineering students and others who cannot fit 123-124 into their programs. Laboratory. Prerequisite: Mathematics 111 and concurrent registration in Mathematics 112. *Staff.*

221 **GENERAL PHYSICS.** F. One and one-quarter course. This course is designed for those who do not intend to do further work in physics. The major areas of physics are discussed: mechanics, heat, electricity and magnetism, waves, relativity, quantum, theory, and particle physics. Laboratory. Prerequisites: plane trigonometry and high school algebra. *Mr. A. Kromminga.*

222 **GENERAL PHYSICS.** S, core. One and one-quarter course. A continuation of 221, which is a prerequisite. Laboratory. *Mr. A. Kromminga.*

223 **PHYSICS FOR THE HEALTH SCIENCES.** F. An introduction to those topics in physics which are basic to work in a variety of health science fields. The course is oriented toward understanding some of the basic laboratory techniques and instruments which are fundamental to medical and para-medical instrumentation. Topics include physical measurements and data analysis, basic mechanics, heat, electric and magnetic fields, electric circuits, basic electronics and instrumentation, optics, radioactivity, and X-rays. Prerequisites: High school geometry and algebra. *Mr. J. Van Zytveld.*

225 **INTRODUCTORY PHYSICS: ELECTRICITY, MAGNETISM, AND WAVES.** F, core. A study of the properties of electric and magnetic fields: a mathematically unified treatment of alternating current circuits, general wave phenomena, and

geometrical and physical optics. Laboratory. Prerequisites: 124 or 126, Mathematics 112, and concurrent registration in Mathematics 211. *Mr. R. Griffioen.*

226 **INTRODUCTORY MODERN PHYSICS.** S. An introduction to quantum effects and the wave-particle duality of matter and radiation: a study of the structure of atoms, molecules, solids, nuclei, and fundamental particles as described by Schroedinger theory. Einsteinian relativity is also considered. Prerequisites: 225 and Mathematics 221. *Mr. R. Griffioen.*

ADVANCED COURSES

Prerequisites for all of the 300-level physics courses are Mathematics 108 or its equivalent and Mathematics 212.

335 **CLASSICAL MECHANICS.** F. The motion of particles, of systems of particles, and of rigid bodies is studied by Newtonian and Lagrangian techniques. Topics included are: oscillatory motion, motion in a central force field, motion in non-inertial reference frames, motion of charged particles, and the inertia tensor of rigid bodies. Hamilton's canonical equations are developed and applied to simple systems. Prerequisite: 124 or 126. *Mr. R. Griffioen.*

345 **ELECTROMAGNETISM.** S. The basic equations of the classical electromagnetic interaction theory are developed. Applications are made to electromagnetic fields in material media, boundary-value problems, electromagnetic energy, radiation, and physical optics. Relativity with its connection to this theory is studied. The basic theory and some applications are considered in 345, while the remaining applications and relativity are reserved for 346. Prerequisite: 225. *H. Van Till.*

346 **ELECTROMAGNETISM.** F. A continuation of 345, which is a prerequisite. *Mr. H. Van Till.*

365 **THERMODYNAMICS AND STATISTICAL MECHANICS.** F. Discussion of the equation of state and the laws of thermodynamics with application to some simple systems; the thermodynamic potentials: kinetic theory. Treatment of statistical mechanics dealing mainly with ensembles and distribution functions, calculation of entropy and the thermody-

amic potentials with application to crystals and gases. Quantum statistical mechanics is considered. Prerequisite: 335. Not offered 1975-76.

375 **QUANTUM MECHANICS.** F. The main emphasis is on wave mechanics and its application to atoms and molecules. One-electron atoms are discussed in detail. Additional topics discussed are electronic spin and atomic spectra and structure. Nuclei, the solid state, and fundamental particles are also considered. Prerequisite: 226. *Mr. A. Kromminga.*

376 **QUANTUM MECHANICS.** S. A continuation of 375, which is a prerequisite. *Mr. A. Kromminga.*

379 **CONTEMPORARY PHYSICS.** S. An introduction to the major areas of current research in physics. Primary emphasis is placed upon solid-state, atomic, nuclear, and elementary-particle physics. Prerequisite: Physics 375. *Staff.*

380 **ANALOG AND DIGITAL ELECTRONICS.** S. An introduction to electronic circuits and devices and their applications. The following topics are included: A.C. circuit analysis; diode and transistor characteristics; amplifiers; oscillators; operational amplifiers; digital logic gates; flip-flops; counters; and integrated circuits. Laboratory exercises in all of the above topics are performed. Prerequisite: Physics 225. *Staff.*

390 **INDEPENDENT STUDY IN PHYSICS.** F, I, S, half or full course. Independent readings and research in physics, under the supervision of a member of the departmental staff. Prerequisite: permission of the chairman. *Mr. V. Ehlers.*

LABORATORY COURSES

181 **BASIC ELECTRICAL MEASUREMENTS.** F, quarter course. An introduction to basic D.C. electrical measurements including Kirchhoff's Laws, potentiometer circuits, and bridge circuits. Techniques of data handling and analysis and a brief introduction to A.C. circuits are included. *Mr. J. Van Zytveld.*

182 **ELECTRICAL MEASUREMENTS.** S, quarter course. Applications of D.C. electrical measurements; A.C. circuits, including experiments on frequency response

and resonance; and an introduction to digital circuitry. Prerequisites: 181 and Mathematics 111. *Mr. J. Van Zytveld.*

381 ELECTRONICS. S, half course. An introduction to, and an analysis of, some of the basic digital and analog electronic circuits commonly used in science and engineering research. Prerequisites: 225 or a year of college physics and permission of instructor. *Staff.*

382 MODERN PHYSICS LABORATORY. F. half course. An introduction to the basic laboratory techniques in atomic, nuclear, and solid-state physics and a study of some of the more important experiments on which modern physical theory is based. Prerequisite: 380, 381, Engineering 308, or a year of college physics and permission of the instructor. *Staff.*

395-396 PHYSICS SEMINAR AND RESEARCH. F, S, half course; I, full course. Library and laboratory research on an approved topic and presentation of the result of the research in a departmental

seminar. Prerequisite: 382 and the approval of the department. *Mr. V. Ehlers.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

- 12 INTRODUCTORY RADIOCHEMISTRY, *Mr. R. Griffioen.*
- 382 MODERN PHYSICS LABORATORY, *Mr. J. Van Zytveld.*
- 390 INDEPENDENT STUDY IN PHYSICS, *Mr. J. Van Zytveld.*

The following interdisciplinary courses are also offered by members of this department.

- 101 INTRODUCTION TO PHOTOGRAPHY, *Mr. J. Korf, Mr. H. Van Till.*
- 108 CHRISTIAN RESPONSES TO CONTEMPORARY PROBLEMS, *Mr. V. Ehlers.*
- 112 SEMINAR IN ENERGY SOURCES, *Mr. A. Kromminga.*
- 301 WORLDS IN COLLISION — IDEAS IN CONFLICT, *Mr. C. Menninga.*

Political science

Professors J. De Borst, J. Westra (chairman)
Associate Professor P. Henry
Assistant Professors R. De Vries, J. Penning

TO BE ADMITTED to a major program in political science a student must have completed 151 with a minimum grade of C (2.0). In addition to 151 the program requires 201, 203 or 303, 207, 305 or 306, and four additional courses in the department. Required cognates include Economics 151 and an approved three-course sequence in one of the following departments: economics, history, psychology, or sociology. Students planning to pursue graduate study in political science should take 302 and both 305 and 306.

Students preparing for a secondary teaching certificate should meet the general major requirements in political science and, as far as possible, in the cognate fields; 202 is recommended but not required. A departmental minor requires 151, 201, 202, and any other three courses. *Mr. De Vries* is the adviser for teacher education.

The core requirements in political science normally are met by 151. Elementary education students may satisfy the core requirement with 201 and Canadian students with 210.

151 INTRODUCTION TO POLITICS. F and S, core. An introduction to political science. Analyzes the nature of the political process, the methods political scientists use in studying it, and some of the key concepts and terminology they have developed to explain it. *Staff.*

201 AMERICAN POLITICS. F and S. A study of American national politics. Emphasis is on the social context, constitutional foundations, and the major institutions, process, and functions of American politics. *Mr. J. De Borst.*

202 AMERICAN STATE AND LOCAL POLITICS. S. A study of American politics on the state and local levels. A comparative approach is used to analyze existing problems and the differences and similarities in political patterns. *Mr. J. Penning.*

203 COMPARATIVE GOVERNMENT—EUROPE. S. A study of the government and politics of four major European states: Great Britain, France, Germany, and the Soviet Union. Prerequisite: 151. *Mr. J. Westra.*

207 INTRODUCTION TO INTERNATIONAL POLITICS. F. Analysis and critique of various theoretical approaches to the study of international politics; concepts of power; the nation-state and the doctrine of sovereignty; diplomacy; nationalism; imperialism; war; balance of power; collective security; and world government. Formerly 307. *Mr. J. De Borst.*

209 PUBLIC ADMINISTRATION. S. An introduction to the political process. Principles of administrative organization, methods of administrative control, and budget management. The organizational and administrative problems encountered by government agencies charged with carrying out public policies. *Mr. P. Henry.*

210 CANADIAN GOVERNMENT AND POLITICS. F. A study of the political system

of Canada with emphasis on national (federal) government and politics. Major topics covered include: the origins and development of Canada's political institutions; Canada's constitution, the British North American Act; Canadian federalism; the operation of the parliamentary-cabinet system in Canada; political parties and elections; social forces and trends in Canadian politics. This course carries core credit for Canadian students only. *Mr. J. Westra.*

302 POLITICAL BEHAVIOR. F. Analysis of the political behavior and opinions of the non-office holding citizen. A study of the theory and methods of the behavioral orientation in political science is included. Emphasis is on the United States. *Mr. J. Penning.*

303 COMPARATIVE GOVERNMENT—THE NON-WESTERN WORLD. S. A study of the politics of Asian and African states. Emphasis is on the issues and problems posed by the modernization process. *Mr. R. De Vries.*

305 HISTORY OF POLITICAL THOUGHT TO THE REFORMATION. F. The development of political thought from ancient Greece to the sixteenth century. *Mr. P. Henry.*

306 HISTORY OF MODERN POLITICAL THOUGHT. S. Representative political theorists from the Reformation to the present. *Mr. P. Henry.*

308 PRINCIPLES OF AMERICAN FOREIGN POLICY. S. An analytical view of American foreign policy; its domestic sources; process of formulating policy; instruments of American diplomacy; the nature of U.S. relations with hostile powers, allies, the emerging nations, and the United Nations; the limitations and potentials of American foreign policy. *Mr. R. De Vries.*

309 INTERNATIONAL ORGANIZATIONS. S. An examination of regional and universal international organizations; their pro-

cesses, functions, and impact on the international system. The United Nations system as well as economic and political integration within the North Atlantic area, among Communist states, and in the Third World.

310 **THE JUDICIAL PROCESS AND CIVIL LIBERTIES.** S. The judicial process in American politics. Special consideration of the Supreme Court's interpretations of the Constitution, with emphasis on civil liberties. *Mr. J. De Borst.*

312 **LEGISLATIVE BEHAVIOR.** F. A study of legislators, legislatures, and the legislative process. The impact of institutional structures, political parties, outside forces, and personal norms on the legislative process. The role of legislatures in the democratic process. State and non-American legislatures are considered but the emphasis is on the federal Congress. *Mr. P. Henry.*

313 **POLITICAL PARTIES.** F. A study of political parties and their role in the political process. The approach will be comparative: different types of party systems; typologies and classifications of

parties; different patterns of leadership, membership, organization. Emphasis will be on parties in Western democratic systems with special attention given to American political parties. *Mr. J. Westra.*

390 **INDEPENDENT STUDY.** F, I, S. Reading or directed projects for majors. Open with the permission of the chairman and the instructor under whom the work will be done. *Staff.*

395 **SEMINAR.**

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 **DUTCH POLITICS AND GOVERNMENT,** *Mr. J. Westra.*

20 **WORK-STUDY INTERIM IN WASHINGTON,** *Mr. J. De Borst.*

390 **INDEPENDENT STUDY,** *Staff.*

The following interdisciplinary course is also taught by a member of this department.

302 **THE THOUGHT OF JACQUES EL-LUL,** *Mr. P. Henry.*

Psychology

Professors A. Reynolds (chairman), R. Youngs

Associate Professors M. Bolt, W. Joosse, W. Sanderson, R. Stouwie, R. Terborg

Assistant Professors M. Van Leeuwen, G. Weaver

Instructor J. Brink

INTRODUCTORY PSYCHOLOGY (151) must be completed with a minimum grade of C (2.0) by students intending to major in the department. The nine course major consists of 151, 250, 306, three 300-level electives, one of which must include a laboratory experience, and three electives from the offerings of the Psychology Department. Not more than one interim and no independent studies (390) may be included in this major.

Students intending to pursue graduate education in psychology or related fields should consult a department member for advice. There are a number of options open which require different types of preparation.

A teaching minor consists of six courses: 151, 212, 306, 311, one from 330, 331, 332, and one elective.

The core requirement in psychology is best met by 151. For students in teacher education programs, Education 301 satisfies graduation requirements but does not serve as a prerequisite for advanced psychology courses Psychology 12, when offered, and 322 may be a part of the teaching minor in the academic study of religions.

151 **INTRODUCTORY PSYCHOLOGY.** F and S, core. An introductory course intended to give the beginner some orientation to the field of psychology in general. The psychology core requirements for students in teacher education programs should be met by Education 301 rather than by this course. *Staff.*

204 **DEVELOPMENTAL PSYCHOLOGY.** F and S. A basic overview of normal development from birth to adolescence. Organization is chronological (infant, toddler, etc.) and conceptual (cognitive development, social-personality development, etc.). Prerequisite: 151. *Mr. R. Stouwie.*

207 **ADOLESCENT PSYCHOLOGY.** F and S. A specialized course in developmental psychology directed specifically to the period from puberty to adulthood. Prerequisites: 151 and 204. *Staff.* Not offered 1975-76.

211 **PERSONALITY AND ADJUSTMENT.** F. A study of psychological theory and research pertinent to personality dynamics and adjustment. Coverage includes: concepts of mental health, need fulfillment, sources of conflict and stress, the nature and effects of anxiety, the self concept, and principles of emotional and interpersonal competence. Attention will be given to the personal application of these topics. Prerequisite: Psychology 151. *Mr. W. Joosse.*

212 **PSYCHOPATHOLOGY.** F and S. A study of the wide range of abnormal behaviors. Emphasis is on causes, dynamics, and classification, with some attention to treatment approaches. Prerequisite: Psychology 151. *Staff.*

216 **PSYCHOLOGY OF THE EXCEPTIONAL CHILD.** F and S. A basic over-

view of the "other" children, those who differ physically, mentally, or behaviorally from "normal" children. Emphasis on casual factors, characteristics, and diagnosis. Prerequisite: 151. *Mr. R. Stouwie.*

250 **DESCRIPTIVE STATISTICS FOR SOCIAL SCIENCES.** F and S. An introduction to the major forms of descriptive statistics (measures of central tendency, variability, linear transformation, area transformation, correlation). Both an understanding of and proficiency in the application of these concepts and techniques in the areas of education, psychology, sociology, etc., will be sought. *Mr. A. Reynolds.*

306 **THE GROWTH OF PSYCHOLOGY.** F and S. A study of the origins of contemporary psychology within science and within philosophy, and of the development of various systematic approaches to psychology as a separate academic discipline in Europe and the United States. Prerequisites: two courses in psychology. *Mr. W. Sanderson.*

308 **INTRODUCTION TO EXPERIMENTAL PSYCHOLOGY.** S. A critical study of experimental methods, problems, materials, results, and conclusions, with major emphasis on perception and learning. Laboratory work will be required. Open only to juniors and seniors intending to major in psychology who have either 250 or Mathematics 206. *Mr. R. Terborg.*

310 **SOCIAL PSYCHOLOGY.** F and S. A critical study of the individual's relationship to other individuals, groups, and cultures. Attention is given to such topics as beliefs, attitudes, and values; social influence and conformity; interpersonal perception and attraction; aggression and social conflict; altruism; and collective

behavior. Prerequisite: Psychology 151. *Mr. M. Bolt, Mr. J. Brink.*

311 THEORIES OF PERSONALITY. F and S. An introduction to modern American and European theories concerning the psychological structure and dynamics of the human person. Prerequisites: 151, 212. *Mr. W. Sanderson.*

312 PRINCIPLES OF PSYCHOLOGICAL MEASUREMENT. F and S. An introduction to the theoretical and practical issues, viewpoints, and techniques of psychological testing in the areas of intelligence and personality. Test construction, including those that measure academic achievement, is emphasized. Prerequisite: 250, Mathematics 205, or Mathematics 343. *Mr. A. Reynolds.*

314 CLINICAL PSYCHOLOGY. S. An introduction to the science, techniques, and art of employing psychological means to promote the welfare or mental health of a person. Prerequisites: 212, 311, and 312. *Staff.* Not offered 1975-76.

315 PRACTICUM IN A CLINICAL SETTING. An introductory course in theoretical and applied psychotherapy, taught in a hospital setting, and appropriate for students interested in clinical and general psychology. This course deals cognitively and critically with various modes of psychotherapy from a Christian perspective, gives the student an acquaintance with a variety of mental hospital procedures, and offers the opportunity to begin in a minimal way and under supervision some direct experience with the disturbed. Prerequisites: junior-senior standing; departmental approval; 151, 212, and 311. *Staff.*

322 PERSPECTIVES OF PSYCHOLOGY. S. In this course the purpose is to explore relationships of psychology to (or its involvement in) various issues in our culture, in such areas as literature, religion, art, or morality. Normally, in any given semester, major emphasis will be focused on only one of these areas. Permission of the instructor is necessary to enroll in this course. Not offered 1975-76.

330 PSYCHOLOGY OF EMOTION AND MOTIVATION. S. A thorough discussion

of the psychological study of emotion and motivation. Recent research findings as well as theory formation in the areas of emotion and motivation is included. Prerequisite: Psychology 151. Two-hour laboratory each week. *Mr. G. Weaver.*

331 PSYCHOLOGY OF SENSATION, PERCEPTION, AND COGNITION. S. A detailed examination of the functions of perception and thought in man. Various theories as well as current research trends will be discussed. Prerequisite: Psychology 151. *Mr. W. Sanderson.* Not offered 1975-76.

332 PSYCHOLOGY OF LEARNING PROCESSES. F. A presentation of empirical strategies and theory formation in the area of the psychology of learning. The importance of learning theory for psychology in general is stressed. Two-hour laboratory each week. Prerequisite: Psychology 151. *Mr. R. Terborg.*

390 READING AND RESEARCH. F, I, S. Prerequisite: permission of the chairman.

395 SENIOR SEMINAR ON ISSUES IN CONTEMPORARY PSYCHOLOGY. F. The preparation, presentation, and discussion of papers based on current psychological literature and empirical research. Open to seniors majoring in psychology. Prerequisite: 308. *Mr. A. Reynolds.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 THE PSYCHOLOGY OF SEX DIFFERENCES, *Mrs. M. Van Leeuwen.*

13 MEASUREMENT-EVALUATION — REPORTING PUPIL PROGRESS, *Mr. A. Reynolds.*

14 EXPLORING BEHAVIOR, *Mr. R. Terborg.*

30 ISSUES IN PERSONALITY PSYCHOLOGY, *Mr. J. Brink.*

31 THE YOUNG CHILD — A LINGUISTIC GENIUS, *Mr. R. Stouwie.*

390 INDEPENDENT STUDY, *Staff.*

The following interdisciplinary course is also offered by a member of this department.

111 THE COLLEGE EXPERIENCE, *Mr. W. Joosse.*

Religion and theology

Professors J. Bratt (chairman), W. De Boer, **D. Holwerda, J. Primus, G. Szymanski, C. Vos, L. Vos
Associate Professors †H. Hoeks, L. Sweetman

THE DEPARTMENT offers a major in Religion and Theology, a major in Religion and Education, and a teaching minor in the Academic Study of Religions. To be eligible for the major programs a student must have completed either 103 or 107 with a minimum grade of C (2.0).

The program for the Religion and Theology concentration requires nine courses including 206, 207, 208, 301, 303, 308, and 395. An approved four-course sequence in another department is also required. The adviser for this program is the chairman.

The training in Religion and Education is for students who expect to serve as director of education in churches, or, in some cases, to serve as Bible teachers in the Christian day school system. The major concentration includes 107, 108, 206, 303, 308, 319, 395, plus three electives in the department and Education 301, 303, 304, 346, and 356. Two of these electives may be satisfied by Greek 205-206 (New Testament Greek) and one by an approved interim course. Students who plan to serve as directors of education in churches should plan to do graduate work in the field of Religion and Education. The adviser for this program is Mr. Louis Vos.

The teaching minor leading to certification in the Academic Study of Religions has been approved by the State of Michigan for a five-year provisional period beginning with the graduates of 1973. The nine-course group minor requires Religion and Theology 151, 234, 305, 319, 390, and 395; two courses from Art 231, 232, English 320, 321, History 201, 202, 203, 204, Sociology 210, 217, 311, Psychology 322; and two courses from Philosophy 204, 205, 207, 209 (or Education 304), Religion and Theology 206, 207, 208, 301, 308, 311, and 313 or other appropriate courses selected with the approval of the adviser for this program, Mr. Henry Hoeks.

The core requirements in religion and theology may be met by selecting one from the following courses in Biblical studies: 103, 107, 108, 207, and 208; and one from the following courses in Theological, Historical, and Religio-cultural studies; 206, 301, 303, 304, 308, 311, and 312. Any departmental course except interims may be chosen by students electing a third core course in religion and theology.

151 INTRODUCTION TO RELIGION STUDIES. F. An introductory course appropriate to prospective teachers, and required of those students who wish to minor in the Academic Study of Religions. This

course deals critically with views of the origin, nature, and function of religions as they are found in the disciplines of cultural anthropology, the history and literature of religion, the phenomenology

of religion, the psychology of religion, and the sociology of religion. This course also includes a study of the relevant Supreme Court decisions, a consideration of the problem of objectivity, an introduction to alternative pedagogical approaches to the study of religions, and an exposure to materials and media appropriate to teaching religion studies. *Mr. L. Sweetman.*

BIBLICAL STUDIES

103 **BIBLICAL THEOLOGY.** F and S, core. A study of the unfolding of the history of redemption as set forth within the historical framework of the Old Testament, inter-testamentary, and New Testament eras. Biblical books and Apocryphal literature are analyzed and the major themes of Scripture are explicated. Students may not take this course and either 107 or 108. Open only to freshmen and sophomores. *Staff.*

107 **OLD TESTAMENT BIBLICAL THEOLOGY.** S, core. Biblical theology for Religion and Education majors and for those desiring a more complete coverage of the biblical theology of the Old Testament than can be offered in 103. *Mr. C. Vos.*

108 **NEW TESTAMENT BIBLICAL THEOLOGY.** F, core. A more complete coverage of the biblical theology of the New Testament than can be offered in 103. A continuation of 107 which is not a prerequisite. *Mr. D. Holwerda.*

207 **THE OLD TESTAMENT PROPHETICAL LITERATURE.** S, core. An intensive study of the place and role of the major and minor prophets in the Old Testament, the commentary they offer upon the history of redemption in Old Testament times, together with an exploration of their basic themes and their continuing relevance. Not open to freshmen. *Mr. C. Vos.*

208 **THE NEW TESTAMENT EPISTOLARY LITERATURE.** F, core. An intensive study of the place and role of the epistles in the canon of the New Testament, the doctrinal and ethical interpretations which these epistles give of the redemption portrayed in the Gospels, the light they shed on the early Christian Church,

and their abiding relevance and significance. Not open to freshmen. *Mr. W. De Boer.*

302 **BIBLICAL ARCHAEOLOGY.** S. A study of the pertinent archaeological data which provide a background for or throw light upon the biblical narrative. Prerequisite: one course in Biblical Studies and junior or senior standing. Not offered 1975-76.

THEOLOGICAL STUDIES

206 **REFORMATION THEOLOGY.** F and S, core. A study of Christian doctrine as formulated in the Protestant Reformation and refined and elaborated by later Reformed theologians. Comparisons are drawn between the Reformed system and those of other branches of Christendom. Calvin's *Institutes of the Christian Religion* serves as a basic text. Not open to freshmen. *Staff.*

308 **CONTEMPORARY THEOLOGY.** F, core. Selected writings of significant contemporary theologians are read and evaluated. Prerequisite: junior or senior standing. Not offered 1975-76.

312 **EARLY CHRISTIAN THEOLOGY.** S, core. A study of the growth of the church towards self-conscious commitment to an articulation of its faith from the sub-apostolic age through St. Augustine. Development and growth of thought will be emphasized and selected writings of major theologians will be studied. Not offered 1975-76.

313 **ROMAN CATHOLIC THEOLOGY.** S. The development of Roman Catholic Theology from the medieval era to present times, finding its climax in contemporary changes growing out of Vatican II. The Council of Trent, Counter-Reformation Theology, papal encyclicals, Vatican I, and major schools of thought and shifting practices will be examined. *Mr. G. Spykman.*

HISTORICAL STUDIES

303 **GENERAL CHURCH HISTORY.** F, core. A survey of the history of the Christian Church from its beginning to the present time, noting deviations from apostolic faith and practice, the interplay with the political, the great Church

councils, the crises that emerge, divisions and reunions, and the confluence of forces that determine the complexion of the Christian Church today. Not open to freshmen. *Mr. F. Roberts.*

304 AMERICAN RELIGIOUS HISTORY. S, core. A consideration of the religious history of our country from the immigration period to the present. Attention is paid to the European background, the early church beginnings in their diversity, the colonial era, the westward movement, current ecumenism, and the major social and political developments in their influence upon the American religious scene. Consideration will also be given to the historical antecedents and the development of the Christian Reformed Church in America. *Mr. J. Primus.*

RELIGIO-CULTURAL STUDIES

The following interdisciplinary course is described in that section of the catalog.

234 THE CONTEMPORARY AMERICAN RELIGIOUS SITUATION. S.

301 CHRISTIANITY AND CULTURE (Studies in Calvinism). F and S, core. An historically-oriented study of the Reformed Christian tradition in the Western world—its origin and development, its basic concepts and life-perspectives, its cultural impact and contemporary relevance. Not open to freshmen. *Staff.*

311 HISTORY OF CHRISTIAN SOCIAL THOUGHT. F, core. A study of the interrelation of Christian teaching and society. From the history of the Christian Church certain periods and movements are selected to demonstrate the interaction of Christian faith and social forces. Not offered 1975-76.

MISSIONS AND WORLD RELIGIONS

203 THEOLOGY OF MISSION. S. A survey of biblical material pertaining to mission. These materials are used in evaluating the contemporary problems of mission: i.e., renascent non-Christian religions, ecumenism, mission in the ferment of social revolution. *Staff.*

204 HISTORY OF MISSIONS. F. The record of missionary history through the

ancient, medieval, and modern periods is examined with a view to ascertaining the principles that come to expression, the methods employed, the areas covered, the chief figures, and the measure of success or failure. In the modern period the great missionary conferences of the twentieth century are analyzed and evaluated. Not open to freshmen. Not offered 1975-76.

305 WORLD RELIGIONS. F. An analytical and critical study of the phenomena, the conceptual pattern, and the sacred texts of the major non-Christian religions: "Primitivism", Hinduism, Buddhism, Shinto, and Islam. Each religion is studied as a total perspective for life which is embodied in inter-personal and communal life, in cult, and in ideology. The study includes "popular" as well as "official" expressions of the religions. *Mr. L. Sweetman.*

RELIGION AND EDUCATION

319 THEOLOGICAL AND HISTORICAL FOUNDATIONS OF RELIGION AND EDUCATION. S. A survey of the educational programs of major Western religions from Old Testament times to the present. By integrating theoretical study with the examination of existing programs in churches and schools, the students are guided in developing a relevant biblical perspective on the relationship of religion to education. Satisfies the Calvin Seminary requirement in psychology and education. *Mr. H. Hoeks.*

390 READING AND RESEARCH. F, I, S, full course or half course. (Minors in the Academic Study of Religion take this half course concurrently with 395). Prerequisite: permission of the chairman. *Staff.*

395 SENIOR SEMINAR. F, full course for majors in Religion and Theology and for majors in Religion and Education; half course when taken concurrently with 390 as a half course for minors in the Academic Study of Religions. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 WOODEN SHOES IN AMERICA, THE CHRISTIAN REFORMED CHURCH

- IN AMERICAN CULTURE, *Mr. J. Bratt*.
 390 INDEPENDENT STUDY, *Staff*.

The following interdisciplinary courses are also offered by members in this department.

- 114 MAY GOD GO TO SCHOOL? THE ROLE OF RELIGION IN PUBLIC EDUCATION, *Mr. H. Hoeks*.

- 119 SAINTS OR SINNERS: THE CHRISTIAN'S SELF-IMAGE, *Mr. L. Tietsma, Mr. L. Vos*.
 300 CHRISTIAN PERSPECTIVES ON THE STUDY OF MAN, *Mr. W. De Boer and staff*.
 303 MAHAYANA BUDDHISM, *Mr. L. Sweetman*.
 304 THEOLOGY OF THE CITY, *Mr. G. Spykman*.

Sociology

Professors H. Holstege (chairman), R. Rice, T. Rottman, W. Smit, D. Wilson
Associate Professors G. De Blaey, P. De Jong, R. Vander Kooi
Assistant Professor D. Smalligan

STUDENTS MUST COMPLETE 151 with a minimum grade of C (2.0) to be eligible for admission to the major program. A concentration in sociology requires 151, 318, 320, and six additional courses, excluding 210, 300, and 301. One interim course in sociology may be included among the additional courses. If possible, 318 and 320 should be taken during the junior year. Students may earn a semester's credit at the Chicago Metropolitan Study Center, applying some of that work to departmental programs. A minor consists of 151 plus any other five courses except 210, 300, 301. The teacher education adviser is Mr. D. Wilson.

The core requirement in sociology may be met by 151 or 217. Sociology 210, 311, and 217 may be a part of the teaching minor in the academic study of religions.

151 SOCIOLOGICAL PRINCIPLES AND PERSPECTIVE. F and S, core. A general introduction to the discipline. Provides a brief theoretical and conceptual grasp of sociology as a body of knowledge dealing with group relationships as these affect both the individual and society. An attempt is made to articulate this knowledge and to demonstrate its use by showing how a sociological perspective offers a rational interpretation of issues current in our society. *Staff*.

210 PHYSICAL ANTHROPOLOGY. F and S. A critical analysis and evaluation of the areas of primate paleontology, human variation, and prehistoric archaeology. *Mr. D. Wilson*.

217 SOCIAL ANTHROPOLOGY. F and S, core. A study of the historical trends in

anthropology that have led to its present day perspective. The concepts of functionalism and cultural relativism are examined and evaluated. The course surveys various cultural patterns around the world. *Mr. D. Wilson, Mr. P. De Jong*.

300 HISTORY AND THEORY OF SOCIAL WORK. F. An analysis of the trends and issues in major fields of social work. A historical perspective is given of public assistance, family and child welfare, mental health, courts and corrections, and anti-poverty programs and their relationship to social work. *Mr. D. Smalligan*.

301 SOCIAL CASE WORK AND SOCIAL GROUP WORK. S. An analysis of social case work and group work principles,

problems, and methods based upon theoretical and case material. Prerequisite: 300. *Mr. D. Smalligan.*

302 URBAN SOCIOLOGY AND COMMUNITY ORGANIZATION. F and S. A descriptive and theoretical analysis of urban society and urban sub-communities. The emphasis is on urban processes and problems and sub-cultures within the city as well as on such contemporary issues as urban renewal and planning. *Mr. H. Holstege, Mr. R. VanderKooi.*

303 CHILD WELFARE AND FAMILY SERVICE. F and S. A study of social policy and service delivery in child welfare and family service agencies. Major topics include: a history of child welfare and family service policy in Europe and North America and the factors causing changes in these policies; a description and evaluation of the contemporary service delivery system and treatment methods; a study of unmet needs and present trends; and a sociological analysis of the relationship between the family, courts, politics, and contemporary American society. Prerequisites: 300 and 301 or the permission of the instructor. *Mr. D. Smalligan.*

304 THE FAMILY. F and S. An intensive culturally comparative and historical analysis of the family as an institution. The contemporary courtship, marriage, and divorce patterns of the American family are also discussed. *Mr. H. Holstege.*

306 SOCIOLOGY OF DEVIANCE. F and S. An analysis of deviant behavior: its causes, manifestations, prevention, and programs of control. Special attention is given to the role of social norms in generating as well as controlling deviance. Emphasis is put on ways in which social structures generate and label deviance. Implications are drawn for various institutions, particularly the school and the church. *Mr. T. Rottman, Mr. R. VanderKooi.*

308 POPULATION AND SOCIETY. F. Introduction to demographic analysis of society. Includes a consideration of the major demographic theories of population growth and how these contribute to an understanding of population explosion; review of how the socio-cultural

dimension of human society affects major sources of population growth: fertility, mortality, migration, and how variations in these reciprocally affect society; and analysis of causes and consequences of population size, distribution, and composition for human society. *Mr. R. Rice.*

309 SOCIOLOGY OF EDUCATION. S. A study of education as a social institution and the school as an organization. Emphasis is on discussing the functions of education for society and the effects of society on education and schools. The school class as a special system is also analyzed with special consideration given to the role of teacher. Prerequisite: 151 or permission of the department. *Mr. G. De Blaeij.*

310 SOCIAL PSYCHOLOGY. F and S. Human behavior as a consequence of man's psychological make-up and his socio-cultural environment. Attention is given to social interaction as it occurs in small group settings. Attention is also given to theoretical frameworks emphasizing self-concept and role playing. Prerequisite: 151, Psychology 151, or permission of the department. *Mr. G. De Blaeij.*

311 SOCIOLOGY OF RELIGION. F. A study of the organizational forms of religion, with special attention being given to the influence and effectiveness of the church in its function as a social institution and to the social influences which have, in turn, affected the church. *Mr. W. Smit.*

312 THE SOCIOLOGY OF COMMUNITY. S. A cross-cultural analysis of the changing nature of the community as a human ecological organization and as a structured system of status and power. Man's utopian dreams of ideal communities are contrasted with the types of communities actually found in primitive, agrarian, and industrial societies. *Mr. W. Smit.*

314 CONTEMPORARY SOCIAL PROBLEMS: CULTURAL AND SOCIAL RESPONSES TO DEATH AND DYING. F. This course begins with a discussion of various theoretical orientations to the study of social problems generally. It then relates these theories to the particular problems associated with death and dying from the perspectives of contemporary culture and

society, of those close to the dying person, and of the dying person himself. Special attention will be given to the extent to which the conceptions and customs surrounding death and dying are functional in their own terms and compatible with biblical norms. *Mr. T. Rottman.*

318 **SOCIOLOGICAL THEORY.** F. An assessment of sociological theory in terms of its historical development and current role in understanding human behavior. Particular attention is given to the function of theory in the research process. Direction is given to the student in the formulation of sociological hypotheses from data. Prerequisite: 151. *Mr. H. Holstege, Mr. T. Rottman.*

320 **SOCIOLOGICAL RESEARCH.** S. An assessment of the nature of the research process as applied to the study of theoretical problems in social science. Guides the student in designing and conducting a research project, involving definition of the problem, consideration of appropriate methods, and the collection and analysis of data. Prerequisite: 151 and 318. *Mr. R. Rice, Mr. P. De Jong.*

380 **FIELD INSTRUCTION IN SOCIAL AGENCIES.** F and S. This field-based course provides a perspective on the various levels of intervention and types of services provided by social agencies. Each

student will be assigned to work with a field instructor in a social agency. The college instructor, the student, and the field instructor will plan a program of involvement in the agency that will build on the student's previous instruction on campus and toward his career goals. Prerequisites: 300 and 301 or the permission of the instructor. *Mr. D. Smalligan.*

390 **INDEPENDENT STUDY.** F, I, S. Prerequisite: permission of the chairman and of the instructor. *Staff.*

395 **SEMINAR.**

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 **ORGANIZED CRIME,** *Mr. H. Holstege.*

11 **THE PLANNED FAMILY,** *Mr. R. Rice, Mr. W. Smit.*

12 **NO PLACE TO LAY HIS HEAD: THE SOCIOLOGY OF HOMELESSNESS,** *Mr. R. Vander Kooi.*

13 **COURTS AND CORRECTIONS,** *Mr. D. Smalligan.*

390 **INDEPENDENT STUDY,** *Staff.*

The following interdisciplinary course is also offered by a member of this department.

103 **VISUAL HUMOR,** *Mr. G. De Blaey, Mr. R. Jensen.*

Spanish

Professor A. Otten (chairman, Department of Romance languages)

Assistant Professors E. Cortina, B. Siebring

Instructor E. Greenway

Assistant Instructors S. Ariza, Y. Byam

STUDENTS may declare for a program of concentration in Spanish after having completed two units of college Spanish with a minimum grade of C (2.0). The program of concentration includes eight regular courses and an interim. The regular courses are 201-202, 217-218, 303-304 or 307-308, and two courses chosen from 305, 306 or 321. The teacher education major consists of 201, 202, 217, 218, 321, 322, and three from 303, 304, 305, 306, 307, 308, 309, 310. The minor program for prospective secondary teachers requires 201, 202, 217, 218, 321, and one additional advanced course. Programs for students beginning Spanish in college, including pro-

spective secondary teachers, should be worked out with the chairman or the program adviser. Cognates in another foreign language through the 200-level, European history, English literature, philosophy, history of music, or history of art are recommended. A year-abroad program is available in Spain. All courses above 102 meet core requirements in foreign language; all courses above 217 meet core requirements in the fine arts.

101 ELEMENTARY SPANISH. F. An introductory course in the use and comprehension of oral and written Spanish. *Staff.*

102 ELEMENTARY SPANISH. S. Continuation of Spanish 101. *Staff.*

121-122-123 INTRODUCTORY AND INTERMEDIATE SPANISH. F-I-S. A closely integrated sequence involving two semesters and the interim for students who have completed two years of high school Spanish with less than a C average or for students who studied Spanish in the tenth and eleventh grades. Students in the teacher education programs who have had no foreign language in high school may register for this course if they have the permission of the department. Students who have previously studied Spanish are assigned to this class on the basis of a placement test administered at the time of fall registration. *Mr. B. Siebring.*

201 INTERMEDIATE SPANISH. F. Review of essential grammatical structures and further training in spoken and written Spanish. Readings from significant Spanish authors. Prerequisites: 101 and 102 or their equivalent. *Staff.*

202 INTERMEDIATE SPANISH. S. Continuation of 201. *Staff.*

321 ADVANCED SPANISH. F. A course designed for the student desiring to pursue graduate studies in Spanish, to engage in the teaching of Spanish, or to achieve a high degree of competence in the language. Conducted in Spanish. Prerequisite: 202 or equivalent. *Staff.*

LITERATURE

217 READINGS IN SPANISH AND LATIN AMERICAN LITERATURE. F. An introduction to the major writers and movements in the history of the Spanish literature from the Middle Ages to the present day. The first semester deals with the literature of Spain, while the

second semester deals with the literature of Latin America. Lectures, readings, and reports. Conducted in Spanish. Prerequisite: 202. *Mrs. E. Greenway.*

218 READINGS IN SPANISH AND LATIN AMERICAN LITERATURE. S. Continuation of 217. *Mrs. E. Greenway.*

303 THE SPANISH NOVEL. F. A study of the Spanish novel from *La Celestina* to the present. Reading and interpretation of key chapters in Spain's outstanding novels as well as complete works. A study is made of the chief characteristics of the various types of novels. Prerequisite: 202 or equivalent. Conducted in Spanish. Not offered 1975-76.

304 THE SPANISH NOVEL. F odd years, core. A continuation of 303. Not offered 1975-76.

305 SPANISH AND LATIN AMERICAN POETRY. F. A study of the history and characteristics of Spanish poetry by means of extensive readings and detailed examination of major poets. Special emphasis will be placed on the themes, forms, and techniques of poets of the last two centuries. Conducted in Spanish. Not offered 1975-76.

306 SPANISH AND LATIN AMERICAN POETRY. S. A study of the history and characteristics of Latin American poetry, by means of extensive readings and detailed examination of major poets. Special emphasis will be placed on the themes, forms, and techniques of poets from the Modernist generation to the present day. Conducted in Spanish. Not offered 1975-76.

307 THE LATIN-AMERICAN NOVEL. F even years. A study of the novels of Latin America with particular emphasis on the last two centuries. Attention will be paid to the conditions that give rise to the different types of novels, as well as to the intrinsic literary value of the novels themselves. Conducted in Span-

ish. *Mrs. E. Cortina*. Not offered 1975-76.

308 **THE LATIN-AMERICAN NOVEL**. S even years. A continuation of 307. *Mrs. E. Cortina*. Not offered 1975-76.

309 **THE SPANISH DRAMA**. F even years. A study of the dramatic expression of Spain's Golden Age of literature. Particular emphasis will be placed on the drama of Lope de Vega, Tirso de Molina, Calderón, and Alarcón. Conducted in Spanish. Prerequisite: 202 or equivalent.

310 **THE SPANISH DRAMA**. S even years. A study of the dramatic expression of Echegaray, Benavente, Lorca, Casona, and Buere Vallejo. Conducted in Spanish. Prerequisites: Spanish 309.

390 **READINGS AND RESEARCH**. F, I, S. Prerequisite: permission of the department.

395 **SEMINAR**.

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

12 **ENSAYOS DE LA ACTUALIDAD**, *Mrs. E. Cortina*.

122 **INTERMEDIATE SPANISH**, *Mr. B. Siebring*.

390 **INDEPENDENT STUDY**, *Staff*.

The following interdisciplinary course is also offered by members in this department.

116 **INTRODUCTION TO BILINGUAL EDUCATION**, *Mrs. E. Greenway*.

Speech

Professors M. Berghuis, A. Noteboom, T. Ozinga, M. Vande Guchte (chairman)

Associate Professor D. Nykamp

Assistant Professors E. Boevé, D. Holquist, J. Korf

PREREQUISITE TO A MAJOR is a minimum average of C (2.0) is one and one-half speech courses, one of which must be from the courses offered in **Public Address**. The major requires 200, 203, an interim, and five and one-half additional courses selected in consultation with a departmental adviser. Recommended cognates for students interested in oral interpretation and drama include aesthetics, history of art, introduction to musical literature, Shakespeare, and non-Shakespearean drama of the Renaissance; for those interested in speech education or speech correction, child psychology, psychology of exceptional children, descriptive statistics for the social sciences, and anatomy and physiology; for those interested in public address, political behavior, psychology of emotion and motivation, social psychology, and logic.

The departmental honors program requires honors registration in three speech courses other than 100 and 200 and the completion of 390 and 395 beyond the minimum eight and a half course major.

A secondary school teaching major consists of 200, 203, 211, 215, 219, 230, 240 plus two and one-half other courses. The elementary school teaching major includes 203, 214, 215, 219, plus five other courses. A six-course secondary school teaching minor should include 200, 203, 211, 215, 219, plus 230 or 240. The elementary school minor is 203, 214, 215, 219, and two electives.

The core requirements in spoken rhetoric may be met by 100; 214, if the student is in an elementary education program; 240; 200; or by an examination, which presupposes formal and practical speech training in high school. The fine arts core requirement may be met by 203, 219, 304, 317, 318, 325, and 326.

100 **FUNDAMENTALS OF ORAL RHETORIC.** F and S, half course. The primary aim of this course is to increase competence in oral communication, which includes a number of ways through which persons send and receive messages. Designated sections emphasize public speaking while others use a variety of approaches. Students in elementary teacher education programs should take 214 instead of this course. *Staff.*

200 **ADVANCED ORAL RHETORIC.** F and S. Composition and presentation of types of speeches, readings in rhetorical theory and criticism of selected contemporary speeches, types of discussion, and parliamentary law. Prerequisite: 100 or equivalent. *Mr. M. Berghuis.*

211 **DEBATE.** F, half course. The forms and procedures of academic debate. Knowledge and competence in debating, judging, and coaching are course goals. Designed for debaters and prospective coaches. *Mr. D. Nykamp.*

230 **MASS COMMUNICATION.** F. Examination of television, radio, film, newspapers, magazines, and books. Emphasis on why and how mass media report events and the resultant effects on public attitude formation and change. Major topics include history of mass media; control and method of control of media; competition for the mass market; extent and quality of news coverage; and effects of mass media on society. *Mr. T. Ozinga.*

240 **GROUP COMMUNICATION.** F and S. Communication in the small group. Major topics include role development, cohesiveness, and group norms. Emphasis is on the task oriented small group. Participation in experimental group situations, reading in group communication theory, and analysis of group communication are required. *Mr. D. Nykamp.*

250 **SEMANTICS.** S. Study of verbal and nonverbal symbols used in communication. Primary emphasis is on the effect

of symbols. Major topics include relationships between symbols and referents, and problems in human communication. *Mr. D. Nykamp.*

305 **PERSUASION.** S. Communication as influence at intrapersonal, interpersonal, group, mass, and cultural communication levels. Emphasis on increased understanding and competence. Prerequisite: 100 or equivalent. Not offered 1975-76.

311 **ARGUMENTATION.** F. Study of rational discourse and its uses. Methods of investigation, analysis, and the use of evidence and logic. Regular application of theory to the student's own communication is required. *Mr. D. Nykamp.*

325 **HISTORY OF RHETORICAL THEORY.** S, core. Major issues in the history of oral rhetoric and communication. Classical, medieval, and early modern theories will be compared to twentieth century approaches. Theorists studied include Plato, Aristotle, Bacon, McLuhan, Burke, Goffman, and representatives of various contemporary schools. Seminar papers and discussions. Not offered 1975-76.

326 **HISTORY OF PUBLIC ADDRESS.** S, core. Significant speeches are analyzed as communication arising out of a dynamic historical context. The role of speakers in the movements and controversies of their day. Included are orators of the Bible such as Moses and Paul; speakers of Greece and Rome, such as Demosthenes and Cicero; preachers such as Chrysostom, Luther, Calvin, Beecher, Fosdick, Marshall, and Graham; political spokesmen such as Webster, Lincoln, Roosevelt, Hitler, and Churchill; and speakers for social reform such as Susan B. Anthony and Martin Luther King, Jr. *Mr. M. Berghuis.*

SPEECH EDUCATION AND SPEECH CORRECTION

214 **SPEECH FOR THE ELEMENTARY TEACHER.** F and S. Designed to familiarize the prospective teacher with the

speech arts used in the elementary classroom and to improve the prospective teacher's use of voice and articulation. *Staff.*

215 **PRINCIPLES OF SPEECH CORRECTION.** F and S. A study of the child's speech development and the types of speech defects that may occur. The course is designed to help the classroom teacher understand and correct minor defects and to handle speech improvement in the classroom. The course will also serve to introduce the student to the profession of speech pathology and audiology. *Mr. M. Vande Guchte.*

307 **FUNDAMENTALS OF SPEECH SCIENCE.** F. A study of the anatomy and physiology of the speech organs, the acoustic characteristics of speech production, speech sound formation, and phonetic transcription utilizing the International Phonetic Alphabet. Prerequisite: 215. Not offered 1975-76.

308 **BASIC AUDIOLOGY AND AUDIOMETRY.** S. A study of the fundamental aspects of hearing: the physics of sound, the anatomy of the ear, the nature of hearing and hearing impairment, and the testing of hearing. Prerequisite: 307 or permission of instructor. Not offered 1975-76.

ORAL INTERPRETATION AND DRAMA

203 **INTERPRETATIVE READING.** F and S, core. A study of the history, principles, and techniques of interpretation. Analysis and oral interpretation of prose, poetry, and drama. *Mr. D. Holquist, Mrs. A. Noteboom.*

219 **PRINCIPLES OF DRAMATIC PRODUCTIONS.** F, core. A study of the theory and principles of drama as revealed in representative plays from the Greek through the modern period. With a view to training the prospective coach, attention will be given to the technical aspects of production. Students will be trained in acting and in directing by means of classroom presentations of dramatic scenes. *Mr. J. Korf.*

220 **THESPIAN PRODUCTIONS.** Half course for the year. Membership in the Thespian group is limited and is determined annually by tryout. The mem-

bers will be given training in the various practical aspects of the production of drama. Students may participate more than one year. *Mrs. E. Boevé.*

304 **ADVANCED INTERPRETATION.** S, core. Continuation of 203. Application of its principles to the novel and drama. Intensive study in preparation for a reading program. Prerequisite: 203. Not offered 1975-76.

317 **HISTORY OF THEATER AND DRAMA.** S, core. A historical and analytical study of theater and drama from its origins to 1800. Not offered 1975-76.

318 **HISTORY OF THEATER AND DRAMA.** S, core. A continuation of 317. An historical and analytical study of theater and drama from 1800 to the present. *Mrs. E. Boevé.*

390 **READINGS AND RESEARCH.** F, I, S. Independent study of topics of interest to particular students, under the supervision of a member of the department. Prerequisite: permission of the department. *Staff.*

395 **SEMINAR.** Research of an approved topic or topics under the supervision of a member of the department, and presentation of the results in a departmental seminar. Prerequisite: permission of the department. *Staff.*

JANUARY 1976 INTERIM

For a full description of all interim courses, see page 129 and following.

10 **GOD'S LIVING WORD,** *Mrs. A. Noteboom.*

390 **INDEPENDENT STUDY,** *Staff.*

The following interdisciplinary courses are also taught by members of this department.

101 **INTRODUCTION TO PHOTOGRAPHY,** *Mr. J. Korf, Mr. H. Van Till.*

106 **MUSICAL THEATER,** *Mrs. E. Boevé, Mr. J. Worst.*

115 **VALUE EDUCATION,** *Mr. D. Holquist.*

118 **JOURNALISM WORKSHOP,** *Mr. P. Oppewall, Mr. T. Ozinga.*

123 **NOISE AND MAN,** *Mr. H. Geerdes, Mr. M. Vande Guchte.*



Interim

Description of January 1976 interim courses

The interim courses in this section are listed alphabetically; they are listed by title alone with the departmental offerings. Courses numbered 1-19 and 110-199 are open to any student; 20-29 and 200-299, to sophomores and juniors; and 30-39 and 300-399, to juniors and seniors.

THE AMERICAN EXPERIENCE: CHANGING VISIONS OF COMMUNITY. Drawing on such humane letters as poetry, drama, sermons, essays, biography, and the like, the class will focus on the recurring theme of "community" as found in the American experience. "Community" is a many-splendored thing, for it glitters with religious, political, social, economic, educational, and philosophic facets. "Community" can be found in the theocracy of the Puritans, the democracy of Jefferson, the transcendentalism of Emerson, the independentism of Emily Dickinson, the new education of John Dewey, the hedonism of Hugh Hefner, and the romanticism of the counter cultures. A "reader" of relevant and illustrative materials will be provided. The student will be expected to choose a sub-theme, develop the theme through independent study, and provide leadership in class by preparing a paper and leading the discussion. *Education 11, Mr. P. De Boer.*

BIOGRAPHIES OF BLACK LEADERS. Surveying the drama of American history through the eyes and lives of Black Americans, known and lesser known, from W. E. B. Du Bois to Robert Smalls, from Denmark Veazie to Malcolm X. Primarily a reading and discussion course. A paper will be required. Significant films will be part of the total package. *History 10, Mr. S. Greydanus.*

CHEMISTRY OF THE ELEMENTS. A study of the significant reactions of the elements. The emphasis will be on the similarities and relationships among the var-

ious elements, with descriptive rather than theoretical aspects of these reactions and relationships. Lectures and assigned readings. Prerequisite: Chemistry 103 or permission of department. *Chemistry 10, Mr. T. Dirkse.*

CHRISTIAN PERSPECTIVES ON THE STUDY OF MAN. An cooperative workshop of students and faculty members involved in developing a Christian view of man and of human society. The group will read together, discuss, evaluate, and attempt to integrate the insights and methodologies of the various disciplines involved in the social sciences — economics, education, philosophy, psychology, religion and theology, and sociology. Previously called: Seminar on Persons in Society. Prerequisites: junior or senior standing and approval of the course chairman. *Interdisciplinary 300, Mr. H. Beversluis, Mr. W. De Boer (chairman), Mr. P. De Vos, Mr. E. Dykema, Mr. T. Rottman, Mr. W. Sanderson.*

CHRISTIAN RESPONSES TO CONTEMPORARY PROBLEMS. An examination of several important contemporary problems from a Christian perspective, intended to prepare students to deal intelligently not only with these issues but with similar issues which they are likely to encounter during their lifetimes. Typical problems may include: the energy crisis, environmental deterioration, population control, urban-suburban conflicts, and modern warfare. The course has dual purposes—learning to understand the issues and learning how to develop problem-solving

approaches to them. Multidisciplinary in perspective; guest lecturers from disciplines closely related to the problems studied. *Interdisciplinary 108, Mr. V. Ehlers.*

CLASSICAL MYTHOLOGY. A study of the major themes in Classical mythology via the literature and art of Greece and Rome. Major literary sources (Homer, the Greek dramatists, Vergil, and Ovid) are read in translation and supplemented by slides of Greek and Roman mythological art. Attention is given to various interpretations of the myths and their influence on Western culture. A course paper or project is required. Lectures, discussions, oral reports, and slides. *Interdisciplinary 107, Mr. R. Otten.*

CLINICAL BIOCHEMISTRY. A survey of the principles and methods used in clinical analysis with emphasis on enzymatic analysis of common, biochemically important substances. Five one and one-quarter hour lectures per week; three to four laboratory sessions per week. May be applied to concentrations in chemistry and appropriate for programs in medical technology. Prerequisite: *Chemistry 114, 253, or 304. Chemistry 20, Mr. R. Albers.*

THE COLLEGE EXPERIENCE. This course will attempt to promote the student's understanding of various dimensions of the college experience. Coverage will include: college goals and individual motivations, determinants of academic performance, choosing a major and vocation, peer relations and sexuality, emotional adjustments and difficulties, maximizing personal growth, and one's evolving identity and life-view. Films, guests, and varied activities will be used but those enrolled will be expected to do considerable outside reading, to involve themselves in personalized, small-group discussions, and to write thoughtful logs. There will be a pervasive emphasis on Christian values and self-understanding. *Interdisciplinary 111, Mr. W. Joosse.*

COLORFUL CHEMISTRY. A study of the chemistry of colored compounds used as dyes and pigments for clothing, paint, printing inks, foods, etc. This course involves a survey of the types of chemical

compounds currently manufactured, their syntheses, and their uses. Representative dyes and pigments will be synthesized in the laboratory. Attempts will be made to visit area industries to witness the manufacture of colored compounds and to observe some of their applications. Prerequisite: *Chemistry 253 or 301. Chemistry 11, Mr. E. Wolthuis.*

COMPUTER MODELS IN MANAGEMENT. A study of computer models for use in management analysis and decision making. Several management problems will be posed and in each case a computer model will be developed to assist in the analysis of the problem. The assumptions which are made in constructing the model and the resulting limitations of the model will be discussed. Finally, the student will be expected to propose a solution to the problem based on his analysis of the output from the model. Prerequisites: *Mathematics 111 or 205 and 107 or 108. Computer Science 10, Mr. S. Leestma.*

CONFLICT AND CHRISTIANITY IN NORTHERN IRELAND. The course will place the "troubles" of present-day Northern Ireland in its context in Irish and British history, and in North American history, because of Irish migration to this continent. With the context established, the course will attempt a detailed analysis of events since 1969. Finally, the course will attempt to bring a Christian perspective to the understanding of the conflict. Books, lectures, films, and songs. *History 12, Mr. R. Wells.*

COURTS AND CORRECTIONS. An introduction to juvenile and adult courts and to the punishment and/or rehabilitation systems attached to such courts. Topics will include: theories of punishment, court procedures, roles of the court staff, presentence investigation, probation, parole, local jails, prisons, rehabilitation programs, and cooperating community agencies. Case studies, meetings with community resource persons, and site visits. Prerequisites: sophomore or higher status. *Sociology 13, Mr. D. Smalligan.*

CURRENT ISSUES IN HEALTH EDUCATION. A study of the objectives, methods, and materials for teaching health educa-

tion. **Focus** will be on drug abuse, smoking, alcohol, body care (dental, nutrition, physical conditioning, etc.), sex education, and mental health. Instructional units will be developed for classroom use at various grade levels (K-12), depending on the student's professional interest. The course will utilize visual aids of various types, materials in the curriculum center, the health department, and various other agencies concerned with community health. Resource persons who have special competency and interest in the field will participate. Field trips to Project Rehab, Planned Parenthood, plus various schools and agencies concerned with the field of health will be scheduled. *Education 30, Mr. W. Hendricks.*

DANTE: A STUDY OF THE DIVINE COMEDY. A reading of the *Divine Comedy* by Dante Alighieri (1265-1321) in English translation will be accompanied by introductory lectures on the poet and his age. After the first week the activity of the course will be intensive discussions of the text. *Interdisciplinary 109, Mr. H. Rienstra.*

DESIGN FROM NATURE. Throughout history artists, designers, and architects have turned to nature as a source of ideas and forms for visual expression. Lectures, discussions, assigned readings, visual presentations, and field trips will expose the student to nature as the teacher of aesthetics. The student will respond through drawings, designs, maquettes, and other visual forms. Appreciations and sensitivity will be cultivated for that in nature which is "at once old and fresh as rain." Students can expect to spend from \$10 to \$20 for materials. Prerequisite: Art 309. *Art 32, Mr. C. Huisman.*

DUTCH POLITICS AND GOVERNMENT. A broad survey of government and politics in the Netherlands. Emphasis will be on the distinctive features of the Dutch political system, especially on the character of the party system and the role of the religiously-oriented or confessional political parties. Social forces and organized group life in the Netherlands will also be examined. An effort will be made to evaluate the Dutch experience in the light of certain theories or models of democracy such as pluralism and consocia-

tional democracy. No prerequisites but it will be helpful if the student has had a course in modern European history or in political science. Lectures, readings. *Political Science 10, Mr. J. Westra.*

EDUCATING THE IMAGINATION. A study of some methods and materials especially useful to language arts and English teachers. Demonstration of and practice with imaginative approaches to literature, film, composition, and creative dramatics. Many short films will be viewed and discussed. Each student in consultation with the instructor, will select a project that will educate him as a future teacher or that will be of future use to him in the classroom; all students will read widely in materials appropriate to the chosen grade level. For sophomores, juniors, and seniors preparing to teach the language arts or English at the junior high or high school level. Prerequisites: English 100 and one literature course. *English 10, Mr. H. Baron.*

T. S. ELIOT. An analysis of the poetry, plays, and some of the criticism of T. S. Eliot. Lectures, papers, and discussions. *English 13, Mr. S. Wiersma.*

ENSAYOS DE LA ACTUALIDAD. A critical study of current essays written in Spanish, particularly as they deal with contemporary social issues. The dozen essays to be studied range from those which bear the restrained tone of the philosopher to those which present the openly provocative challenge of the editorial page. Discussions and conversation as prompted by the readings. Prerequisite: ability to read and converse in Spanish. *Spanish 12, Mrs. E. Cortina.*

ENVIRONMENTAL SCIENCE. This course is about natural ecosystems and man's interaction with them. Emphasis is on the biological aspects of environmental science and three problem areas — population growth, energy, and agriculture. Scientific, social, and economic issues are stressed. Intended for the non-science students. Lectures, films, student reports, and research paper required. *Interdisciplinary 102, Mr. A. Bratt.*

ESCHATOLOGY AND ECONOMIC GROWTH. A study of the recent literature on the

ideas of exhaustible resources and economic growth, including the two reports of the Club of Rome. The critique of that approach by the neoclassical economics. An examination of the literature on optimal level of growth, including the "Golden Rule" and the Turnpike theorems. These various approaches are evaluated in the light of Biblical eschatology. Prerequisite: Economics 151. *Economics 12, Mr. J. Tiemstra.*

EXPLORING BEHAVIOR. Some recent, popularly written studies in psychology will first be reviewed, and then some of their findings and conclusions will be tested in student-conducted experiments. Little or no background in psychology or statistics is necessary. A wide range of topics will be considered. What is the relationship between conformity and behavior? When do people help in a crisis? How does a person memorize? What type of person is prone to steal? Besides regular course work students should plan to spend two to three hours per day conducting experiments either in the laboratory or in the field. This course is not intended for students who plan to take Psychology 308. Prerequisite: Psychology 151. *Psychology 14, Mr. R. Terborg.*

FEDERAL INCOME TAXES. A study of Federal Income Tax Law as a basis for understanding the provisions and rate structure of the tax code and for developing competence in the preparation of income tax returns. The emphasis is on taxation. Daily class sessions will require tax readings and problem preparation. Official tax return forms will be used for some of the problem work. The course grade will be based upon timely submission of homework problems and a satisfactory open-book examination. Honors candidates will also complete a selection of short tax research problems. Volunteers will be solicited for tax preparation assistance at Baxter Community Center. Satisfies departmental concentrations. Prerequisite: Economics 207. *Economics 10, Mr. K. Kuipers, Mr. R. Medina.*

FICTION IN FRANCE. A study of French fiction in translation by authors students have always wanted to read but who never found their way into their lit

courses. Students will read, analyze, and discuss novels and short stories by such masters as Voltaire, Maupassant, Zola, Saint-Exupéry, Gide, Camus, and others. Lectures will provide historical and literary perspective. Fine Arts core credit available to students who pass a final examination; all students will take periodic quizzes. *French 11, Mrs. E. Monsma.*

FRENCH INTERIM ABROAD. Five weeks in France, with study program in Paris and a one-week trip to the châteaux of the Loire valley. Lectures and visits to monuments, museums, and *quartiers* important in the history and culture of France, as well as plays, concerts, and excursions. Readings, required use of the French language. Five days for independent study and travel at the end of the course. A special fee of approximately \$700 will be charged (the exact cost will be known three months prior to departure). Prerequisites: French 201 or its equivalent, and approval of instructor. May be applied to French concentration. *French 10, Mr. A. Otten.*

GERMAN INTERIM ABROAD. This course will be approximately five weeks in length, and will be conducted in West and East Germany. A brief tour through Northern Germany will be followed by ten days of study in Husum, Schleswig-Holstein. A second study-phase of the course will be conducted in West Berlin, and will be followed by a tour of East Germany. Course participants will be given five days for independent study and travel prior to returning to the U.S. Prerequisites: German 201 and permission of instructor. Fee of approximately \$625. *German 10, Mr. W. Bratt.*

GOD'S LIVING WORD. This course aims at giving the student the principles and practice of oral interpretation as applied to Biblical prose and poetry. Various selections will be studied and read aloud by each student. Through this study the class will attempt to recreate and practice the "living Word" and to share the experience of this "aliveness" with others. There will be opportunity for group readings. *Speech 10, Mrs. A. Noteboom.*

GOD, MAN, AND THE HUMAN COMMUNITY? What is the nature of the divine?

Of man? What is the nature of the relationship between them? How do the answers to these questions affect one's view of what human political and social institutions ought to be? This course will attempt to study the answers the ancient Greeks gave to these age-old questions, and to present a Christian critique of their unique perspective. Lectures, student reports, classroom and small group discussions and audio-visual materials will all be used. *Greek 10, Mr. G. Harris.*

GRAPH THEORY. Graph theory is based on the simple idea of points interconnected by lines. Out of this basis grows some rather simple, accessible, and powerful tools for constructing models and solving problems having to do with the discrete arrangements of objects. Applications are to scheduling of processes, critical-path analyses, tactics and logistics, communication systems, information transmittal and retrieval, optimum routes, network flows, social group structures, etc. The applications are numerous. This course will concentrate on some of the basic concepts of graph theory such as graph isomorphisms, connectivity, trees, directed graphs, cut-sets, matrix representations. It will also examine some applications in such areas as economics, operations research, combinatorial problems, physical sciences, social sciences, computer science. The students will be expected to study one of these applications in some depth and present it to the rest of the class. Prerequisite: Mathematics 211, *Mathematics 20, Mr. L. Nyhoff.*

GRAPHIC ARTS: PROBLEMS IN DESIGN AND REPRODUCTION. An exploration and discussion of the graphic arts, such as are required for designing posters, trademarks, logos, and other promotional materials. The student will be challenged to create a concept in a visual form and to learn to translate this visual form into an economically feasible medium of reproduction and to make the necessary preparations for reproduction. Class assignments, reading and research, and visits to various local printing firms, advertising agencies, and lithography workshops will make up the activities of this interim. Prerequisite: Art 209. *Art 30, Mr. C. Overvoorde.*

HEAT TRANSFER. An Interim approach to a traditional course. Introduction to the analysis of steady and unsteady conduction, of free and forced convection, and of radiation modes of heat transfer; experiments include conduction, radiation, and free molecular conduction at liquid nitrogen temperatures, heat pipe conduction, and free convection. An emphasis on using the analog and digital computer in solving problems, and operational introduction will be given in numerical analysis and Monte Carlo techniques for solving heat transfer problems. Team work is emphasized. Prerequisite: Mathematics 212. *Engineering 36, Mr. L. Van Poolen.*

ERNEST HEMINGWAY: THE MAN AND HIS WORK. This course is designed to meet the interests of general students as well as those of English majors. Students will read five of Hemingway's novels, some of his short stories, and one biography. For purposes of comparison in theme and technique, they will also read one novel by F. Scott Fitzgerald, Hemingway's contemporary and friend. The course will focus on three major themes which take expression in Hemingway's work: war, love, and the good life. There will be daily discussions, some lectures, and a few films. The reading list for the course is available in the English Department Office. Prerequisite: English 100. *English 12, Mr. K. Kuiper.*

HUMAN NUTRITION AND HEALTH. This course is designed to acquaint the student with the relationship of nutrition to the establishment and maintenance of health. Analysis of dietary intake with respect to several nutrients will be part of the course. The student will devise nutritionally sound diets providing minimal or maximal caloric (energy) intake. In addition to the food and nutrition aspects of health, several disease conditions will be discussed as well as the effects of various prescription and non-prescription drugs. Prerequisite: one course in biology. May be applied to elementary science studies concentrations. *Interdisciplinary 104, Miss B. Klooster.*

IMAGES OF WOMEN IN LITERATURE. The images of women in life and literature are undergoing analysis and change.

Since literature both reflects and helps to create reality, this course will focus on the stereotypes of women in literature: wife, mother, seductress-goddess, sex object, old maid, and the liberated woman, a new stereotype. The course will include reports, selected readings, projects, and discussions of issues of current importance to women. *English 31, Miss M. Walters, Mrs. M. Zylstra.*

INDEPENDENT STUDY IN BIOLOGY. A course based on a laboratory project resulting from a literature survey. The project will be conducted in consultation with an instructor. Group meetings will include progress reports and a final report session. At the final report session, each student will present a paper summarizing the literature on the topic and the accomplishments on his Interim project. Prerequisites: Biology 395 and permission of the department. *Biology 390, Mr. B. Ten Broek.*

INDEPENDENT STUDY IN PHYSICS. This course has two basic options. One option is the theoretical study of a particular topic in physics. The second option is to spend the interim in the physics laboratory doing either a series of prescribed experiments (such as the Modern Physics Laboratory course) or an independent research project. The approval of the Physics Department is required. *Physics 390, Mr. J. Van Zylveld.*

INTERDISCIPLINARY PROBLEM SOLVING. Problem-solving activities related to real-life social project-planning and implementing, insofar as possible, a manufacturing enterprise dedicated to the employment of inner-city teenagers. Problem-solving action will involve legal, technical, business administration, sociological, and educative decision-making. General patterns of problem-solving will be explored and applied to project problems using Rubenstein, *Patterns of Problem Solving* as a model. Prerequisite: approval of one of the instructors. *Interdisciplinary 110, Mr. J. Bosscher and staff.*

INTERIM IN APPALACHIA. This course provides a cross-cultural, teacher-training experience in the Appalachian region of Western North Carolina, using Mars

Hill College as a base. Students will act as teacher aides three days a week in a mountain community school and will spend two days in seminars discussing appropriate learning theory and developing teaching materials. Additional work will be done with the Mars Hill College Appalachian Study Group. Background reading required before the Interim. Fee for transportation, materials, etc. of approximately \$90; fee for room and board approximately \$100, which is equivalent to the Calvin residence hall refund. Prerequisite: approval of the instructor. *Education 12, Mr. P. Lucasse.*

INTERMEDIATE FRENCH. Second course in the three-course sequence, French 121-122-123. *French 122, Staff.*

INTERMEDIATE GERMAN, German 122. This course will include an intensive review of German grammar, the development of basic language skills, and an introduction to German prose literature. Standard basic foreign language learning pedagogy will be employed. This course is the second unit of a three-course sequence intended for students who were placed in German 121 for the fall semester. *German 122, Mr. J. Lamse.*

INTERMEDIATE SPANISH. Second course of three-course sequence, Spanish 121-122-123. Prerequisite: Spanish 121. *Spanish 122, Mr. B. Siebring.*

INTERNSHIP IN BUSINESS. Full-time work-study in a cooperating business firm during the Interim Term, and in some cases continuing on a part-time basis into the Spring Semester. Participating students are required to submit a paper describing their internship experience and its relationship to their academic studies, and all participants are required to attend group meetings during the term to discuss and evaluate their experiences. Grades will be based upon the paper, group meeting participation, and a report from the sponsoring employer. Prerequisites are junior or senior business economics major status and departmental approval. Enrollment is limited and no student may intern with a prior employer. Application for the internship must be made by September 30 on forms available from the department. *Economics 31, Mr. D. Pruis.*

AN INTRODUCTION TO AMERICAN-JEWISH WRITERS. A survey of novels, short stories, and poetry written by Jewish writers in the United States. Included will be Salinger, Roth, Malamud, Bellows, Singer, Potok, Mailer, and Shapiro. Papers and discussions. *English 16, Mrs. W. Holkeboer.*

INTRODUCTION TO BILINGUAL EDUCATION. This course is designed to prepare education students to function as teacher or aide in bilingual classroom situations. The course includes formal lectures and study in such areas as linguistics, language interference, vocabulary, sentence structure, idioms, the teaching of reading, transfer of skills, placement of the newly-arrived student, choice of learning materials, audio-visual aids, and bi-cultural aspects of learning. An important part of this course will be observation and practice in local bilingual classrooms. **Prerequisite:** Spanish 102 or its equivalent. *Interdisciplinary 116, Mrs. E. Greenway.*

INTRODUCTION TO PHOTOGRAPHY. Students will explore photography as an art form, as a means of creating images, and as a means of expressing and interpreting themselves and the world about them. Great photographers and their photographs will be studied, but the emphasis will be upon the work of the students. Daily assignments will be made, and students will be expected to do all their own camera and darkroom work. A portfolio of finished work will be required of each student. A fee of \$10 will cover darkroom expenses; students will incur additional expense in purchasing enlarging paper and film. **Prerequisites:** permission of an instructor; a good camera with a depth-of-field scale and means for manual control of focusing, shutter speed, and aperture; a serious interest in photography as an art form. *Interdisciplinary 101, Mr. J. Korf, Mr. H. Van Till.*

INTRODUCTORY RADIOCHEMISTRY. A study of natural and induced radioactivity, the interaction of radiation with matter, and the detection and measurement of radiation. Basic theory will be studied, as well as applications of radioisotope technology to chemical and bio-

logical systems. Laboratory work is an integral part of the course. **Prerequisites:** high school chemistry, Chemistry 103 or 113. Satisfies science studies group major and group major for medical technology. *Chemistry 12 or Physics 12, Mr. R. Griffioen.*

INTRODUCTION TO THEOLOGICAL GERMAN. Intensive readings in German translations of the Bible and in German theological material of the nineteenth and twentieth centuries. The course is designed to develop in students familiarity with a broad range of German theological terminology and relative ease in comprehending modern German theological writing style. **Prerequisite:** German 202, *German 11, Mr. J. Schuurmann.*

INTRODUCTION TO VERTEBRATE ETHOLOGY. For many thousands of years man has observed with fascination, and frequently misinterpreted, the behavior of the animals with which he shares this world. Out of this fascination has developed the modern discipline of ethology, the area of zoology dealing with animal behavior. This course will consider the basic concepts of ethology and examine, in a comparative manner, various types of behavior found among the vertebrates. The daily class schedule will consist of both morning and afternoon sessions. The bulk of the course material will be presented during the morning sessions by means of lectures, slides, and films. Afternoon sessions will be spent in the laboratory where students will work in groups to describe and analyze the behavior of one or more vertebrate species. Each student will prepare a paper based on the data collected by his group. May be applied to junior high science studies group minor. **Prerequisite:** one course in biology. *Biology 22, Mr. R. Van Dragt.*

ISSUES IN PERSONALITY PSYCHOLOGY. This course will examine the causes, dynamics, and consequences of various personality characteristics which are of current interest to researchers in the field of personality psychology. Special consideration will be given to the nature of individual differences in manifest anxiety, authoritarianism, need for achievement, and self-concept. Attention will also be

focused on the theoretical controversy concerning the role of situational as opposed to trait determinants of behavior. Prerequisite: Psychology 250. *Psychology 30, Mr. J. Brink.*

JOURNALISM WORKSHOP. A workshop in various types of journalism including writing assignments in stories suitable for newspaper, magazine, and broadcast reporting. Practice in editing and rewriting stories. Selected readings. Discussions of journalistic techniques with leading West Michigan journalists. Assignments include writing straight news, features, and editorial comment; writing for the eye and for the ear; arrangements of the story for interest arousal; and simulated radio-TV newscasting. Typing ability is useful. *Interdisciplinary 118, Mr. P. Oppewall, Mr. T. Ozinga.*

LABORATORY EXPERIENCES IN BIOLOGY. Questions arise from laboratory exercises that can be answered experimentally. If you have had such questions in Biology 111, 121, 122, 221, 251, or 252 this is your chance to work at them in a laboratory setting. This course is also designed to familiarize the student in medical technology programs with some of the diagnostic techniques used in the clinical laboratory (such as hematology, immunology, and microbiology.) *Biology 21, Mr. B. Ten Broek.*

C. S. LEWIS. A study of some prominent themes in the works of C. S. Lewis: uses of literature, the task of literary criticism, natural law as a basis for Christian apologetics, the hazards of modernity, the burden and the glory of the Christian life. Lectures, readings, discussions, and a paper. Prerequisite: English 100 or equivalent. *English 11, Mr. S. Vander Weele.*

MAHAYANA BUDDHISM. An introduction to Mahayana Buddhism; its origin, its objectives, its techniques, and its historical development. Special emphasis placed on the expression of Mahayana Buddhism in two Japanese sects: Nichiren and Zen. Readings, slide-lectures, technique demonstrations, and seminar discussion. *Interdisciplinary 303, Mr. L. Sweetman.*

MAMMALIAN STRUCTURE: GROSS AND MICROSCOPIC. The lectures presented deal with the gross as well as microscopic structure of the cat. After attending a lecture dealing with the gross structure of a particular mammalian system, each student will dissect this system in the laboratory. Thus he will examine and verify the lecture material and will see the organization of structures in the specimen. After attending a lecture dealing with the microscopic structure of the same system, each student will study prepared slides dealing with the organs of that system. This course, which may be applied to elementary science studies concentrations, also serves the needs of medical technology and pre-nursing students. Prerequisites: Biology 115, 122, or 251. *Biology 20, Mr. H. Bengelink.*

A MATHEMATICAL MORALITY PLAY. The student will observe and participate in a set theoretic morality play, a synopsis of which follows: Characters are a Mathematician and a chorus of students.

Act I: Mathematician works happily in the Cantorian paradise of naive set theory, subduing cardinal and ordinal numbers.

Act II: Mathematician is confronted with the ethical demands resulting from the axiom of choice.

Act III: Mathematician is cast out of his Eden and prevented from returning by the angel of paradox.

Act IV: In the sweat of his brow, Mathematician constructs the real number system.

Rated M (For mathematical audiences only). Prerequisite: Math 112 or permission of department. *Mathematics 11, Mr. T. Jager.*

MATHEMATICS EDUCATION INTERIM ABROAD. The students will be visiting schools in the radius of a hundred miles of London, England. Each of the schools to be visited has been a pilot school for the Nuffield Project, an experimental program for teaching elementary mathematics using manipulative materials. Each student will be spending about a week at each of three different school systems. An effort will be made to determine the effect of the Nuffield Project upon the mathematics teaching at these schools. May be applied to elementary

group concentrations. Fee: approximately \$700. *Mathematics 10, Mr. P. Boonstra.*

MATHEMATICS IN THE MODERN WORLD.

This course is based upon mathematical articles that have appeared in *Scientific American* between 1948 and 1968, which have been compiled in a book used as the main text. Another reference is *Mathematics in Western Culture* by Morris Kline. The instructor will serve as a mathematical resource person, presenting mathematical concepts and ideas to the group. There will be an opportunity for the participants to do some independent work, possibly relating mathematics to their main interest area. No prerequisites. Core credit. *Mathematics 12, Mr. G. Van Zwalenberg.*

MAY GOD GO TO SCHOOL? THE ROLE OF RELIGION IN PUBLIC EDUCATION.

The course is an inquiry into the legal, curricular, practical, and political dimensions of the role of religion in public education. What does the First Amendment really say about religion? What was and is the place of religion in public education? What has the Supreme Court permitted, and not permitted in its crucial decisions *re* education? What did the court mean by "study of the Bible or of religion when presented objectively" ? What curriculum materials consistent with the court's intent are available? What is being done with religion in area public schools? What is the Christian's challenge in this endeavor? Readings, films, lectures, interviews, field observations and/or teacher aiding in religion studies in area public schools will be included. Satisfies requirements in the academic study of religions minor. *Interdisciplinary 114, Mr. H. Hoeks.*

MEASUREMENT - EVALUATION - REPORTING PUPIL PROGRESS.

This course is designed for individuals who plan to enter teaching within the next year. It will treat the construction, administration, scoring, and use of a variety of both teacher-made and standardized tests. Consideration will be given to both criterion — and normative — referenced measurement. The course will include lectures, demonstrations, discussion, and

independent study. May be applied to departmental teaching and group concentrations. Prerequisites: Education 301. *Psychology 13, Mr. A. Reynolds.*

MEDICINE FOR THE LAYPERSON. A study in layman's language of many common illnesses and maladies — strokes, heart attacks, migraine headaches, diabetes, "high blood pressure," ulcers, cancer, allergies, etc. The disease process, the current mode of therapy, and prognosis are examined and discussed; myths and old wives' tales are exposed. Students may also present topics that they wish discussed. Prerequisite: Biology 111 or 115. *Biology 12, Mr. P. Tigchelaar.*

METALS FOR CONTEMPORARY CRAFTSMEN.

Students will explore jewelry making as a form of human expression — its ideas, history, esthetic principles, and design concepts. Metal sculpture techniques employed are forging, piercing, soldering, fusing, and casting. Prerequisites: Art 207 and 208. *Art 31, Mrs. H. Bonzelaar.*

MINDS, MACHINES, AND GÖDEL.

Several philosophers and mathematicians have asserted that the Gödel Incompleteness Theorems show that it is impossible to make a mechanical model of the capacities of the mind to prove the theorems of arithmetic. The purpose of this course is to provide the mathematical background to make intelligent judgments relative to this assertion and to give an answer to the questions raised. The course will be divided into three parts. Part I will cover the necessary prerequisites. A mathematical setting will be created in which compact, elegant proofs will be given for these theorems. Part II will consist of a period of independent library work in which the students will be assigned the reading of the important papers on the topic which have appeared in the literature. Part III will consist of classroom discussion of the questions raised. The arguments presented will be summarized and a resolution of the problems raised will be given. This course is intended for junior or senior-level students of philosophy or mathematics. A previous course in symbolic logic will be helpful. A course paper or project will be required. *Mathematics 30, Mr. P. Zwier.*

MODERN PHYSICS LABORATORY. *Physics 382, Mr. J. Van Zytveld.*

MUSIC IN RECREATION AND LEISURE. This course is intended as an introduction into the use of music in recreation and leisure. It will explore the various kinds of recreation in which music plays a role, such as those involved in camping, in senior citizen groups, in clinical institutions, in parks and playgrounds, in community centers, etc. Instructional ideas and resources will be presented in lecture and class participation will provide laboratory experiences. Topics covered will include group singing, song leadership, simple instrumental accompaniments to songs, choral speaking, the role of music listening, dramatic movement, and folk and square rhythmic. If arrangements can be made, the course will involve going into the community for practical work in musical activity in community groups. Not open to music majors or to those who have completed Music 222. *Interdisciplinary 105, Mrs. D. Hageman, Miss G. Huisman.*

MUSIC IN THE UNITED STATES. This course will make the music student aware of the history of music in the United States. Students will examine the style of music by significant American composers from pioneer times until the present day. Music will also be studied as a sociological phenomenon in the United States. The text will be *Music in the United States* by Wiley Hitchcock. Outside readings, seminar reports, term paper. Prerequisites: Music 103, 104, 203, and 204. *Music 31, Mr. H. Slenk.*

MUSICAL THEATER. The American musical is a genre of theater quite distinct from drama. It has become one of the most impressive forms of theater in this country. This course will attempt to develop a greater appreciation for this form through lectures, lecture demonstrations, preparation for production, and participation in the presentation of an original musical relating to the Centennial celebration of Calvin College. Papers and/or projects will be required from all class members. Class sessions will be held in the morning; production rehearsals and project work will be held in the

afternoon. Those members of the class wishing to play with the orchestra for the presentation must audition for Professor Worst on October 1; those members of the class wishing to act must audition on December 1. A student does not have to perform as a prerequisite for the course; however, he will be required to assist in the production. The course is open to all. *Interdisciplinary 106, Mrs. E. Boevé, Mr. J. Worst.*

NEO-KUYPERIANISM. This course provides an opportunity for students of all departments, without philosophical prerequisites, to look at a much-discussed 'mind' at work in the Christian Reformed Church and far beyond. The intention is to look at it in the light of the Scripture. Items of discussion: The appropriateness of the 'neo-'; the background for understanding nineteenth century leaders like Guillaume Groen van Prinsterer and Abraham Kuyper; sphere-sovereignty, a principle of the Reformed Reformation, in Kuyper, Vollenhoven, and Dooyeweerd. Are school authorities 'in loco parentis'; do we need school creeds in addition to the creeds we already possess? The various forms of the Word of God. Is revelational truth propositional? The nature of man in his unity. Man and the world; one creation. Creation and history. Religion, philosophy, and the sciences. No prerequisite. *Philosophy 11, Mr. E. Runner.*

NOISE AND MAN. A study of the physiological and psychological effects of noise on man. A discussion of the processes of hearing and the testing of hearing provides background for a definition of "noise damage" and for the use of a sound level meter and other instrumentation used in making noise surveys. The effects of noise in home and office, in industry, at airports, in agricultural and recreational settings, and in urban areas, with classroom discussions being supplemented with special guest lecturers and class trips to agencies and industries concerned with noise abatement. The Grand Rapids Noise Control Ordinance will be studied and enforcement procedures observed; state and federal legislation and programs will also be studied. Course requirements will include a study of relevant articles about noise, reports on spe-

cial lectures and class trips, a mid-term test, and participation in a research project related to noise measurement and control. Travel Fees: about \$10. *Interdisciplinary 123, Mr. H. Geerdes, Mr. M. Vande Guchte.*

NO PLACE TO LAY HIS HEAD: THE SOCIOLOGY OF HOMELESSNESS. An examination of the concepts of "home" and "homelessness", treating a variety of homeless populations and their cultures as well as the societal and personal problems related to these, especially in the United States but also in other countries. Today homelessness exists among Americans who are young and old, male and female, and it occurs in "acute" disaster circumstances as well as in "chronic" long-term situations. The course will explore homeless life-styles especially for skidrowers, but also for other elderly citizens, youthful "run-aways", victims of broken homes, and others alienated from our culture. Causes of and cures for such situations. Homeless people will be examined in the urban and other communities in which they exist and the social agencies that serve or at least relate to them will also be studied. Most work will be in Grand Rapids but there will be a three-day visit to Chicago. Fee of about \$20 to cover travel costs. *Sociology 12, Mr. R. Vander Kooi.*

ORGANIZED CRIME. This course is about organized crime in the United States. The history of organized crime will be discussed along with an emphasis on the relationship of organized crime to contemporary American institutions. The services that organized crime provides in the areas of gambling, illegal drugs, and illicit sex will be discussed. There will also be an examination of the corrupting influence of organized crime on police departments, judges, and politicians. An emphasis on the functional and dysfunctional aspects of this type of criminal behavior on American society and an examination of the response that the Christian community should give. There will be a heavy emphasis on reading many of the excellent books recently published about organized crime. This course may be applied to a departmental major. *Sociology 10, Mr. H. Holstege.*

THE PAST IS PROLOGUE: A CENTURY OF CALVINIST EDUCATION. A study of origins, ethnic and ideological, of Calvin College and the Calvinist day school movement and their development over the last one hundred years. Primary focus of the course will be on working with original source materials and documents of Calvin's Heritage Hall collection. Common required readings in secondary sources; an individual research paper on some special area or issue suitable for publication in a history or education journal. Prerequisite: a course in history or education. *Interdisciplinary 117, Mr. H. Brinks, Mr. D. Oppewal.*

PIANO PEDAGOGY. A course designed to prepare students to give instruction in piano. Emphasis on goals, methods, and materials, class discussions, outside reading, films. The course will be followed second semester with required teaching experiences involving children, under the guidance of the instructor. Prerequisite: permission of the instructor. *Music 10, Mrs. T. Knol.*

THE PICK AND SHOVEL PEOPLE. A history of Middle East archeology from 1850 to the present. The course will survey the careers of major archeologists, the methods they developed, and the influence their work has had on the writings of Middle East history. Prerequisite: History 101 or 102. *History 30, Mr. B. De Vries.*

THE PLANNED FAMILY. The course begins with an introduction to the notion of the planned family. This involves a look at its historical development, the current family planning movement, and a survey of findings on attitudes toward family planning, including various ethical and religious views. The major part of the course is structured around selected contemporary issues related to family planning, such as, contraception, sex education in the schools, family planning, services for teenagers and unmarried persons, abortion, sterilization, artificial insemination, genetic consequences, voluntary childlessness, adoption and foster homes. For each selected issue ethical, religious, legal, social, and psychological considerations are explored. The course is team-taught by two members of the

Sociology Department. Student involvement is emphasized. Considerable reading is required and small-group discussions are held regularly. Films and other media are used and a number of guest speakers from the community are asked to present various sides of the issues. *Sociology 11, Mr. R. Rice, Mr. W. Smit.*

PLANT PROPAGATION. An introductory course to the theory and practice of plant propagation designed for plant biologists or students interested in dorm and home gardening. Techniques for growing plants from seeds and cuttings; grafting, budding, layering, and tissue culture. Classroom presentations will introduce the laboratory and greenhouse sessions. Cultivated tropical, subtropical, and temperate zone plants will be used in learning the techniques and theory of plant propagation. Prerequisite: Biology 111, 122, or 252. May be applied to elementary science studies concentrations. *Biology 10, Mr. J. Beebe, Mr. A. Gebben.*

PRACTICUM: INTRODUCTION TO TEACHING IN THE KINDERGARTEN. Lectures, demonstrations, experiences, and assigned readings designed to develop sensitivity to the characteristics of the kindergarten child, to explore teaching techniques appropriate to learning styles of kindergarten children, and to provide opportunities for interacting with kindergarten children in area schools. Students will be expected to spend two hours each day in course work on campus and at least two hours each day in a kindergarten classroom. Prerequisite: Interest in young children. *Education 10, Mrs. K. Blok.*

PRAISE HIM WITH THE TRUMP THAT SWINGS? A course in the understanding and appreciation of church music and a consideration of questions of liturgical propriety by means of a study of the functions of music in the public, communal worship of various Christian traditions. The study will include examination of the music itself, analysis of the liturgies for which the music was composed, explanation of the theologies these liturgies and their music reflect, and discussion of the nature of public worship and of the principles which control it. The course will include lectures, class

discussion, reading, listening assignments, and visits to churches. No historical or theoretical knowledge of music is required. Ability to follow a score will be helpful but not essential. *Music 11, Mr. J. Hamersma, Mr. C. Stapert.*

PROFESSIONAL JOURNALS IN ENGLISH LANGUAGE AND LITERATURE. A course in the character and function of the literary journal, past and present, emphasizing approximately twenty journals of special importance to English majors and English graduate work. Using the bibliography of English journals compiled during the 1975 Interim, students in this class will become acquainted with the function and content of leading journals, noting their varied contributions to current literary criticism. Students will prepare bibliographies and abstracts of articles for classroom discussion, compile bibliographies leading toward writing short articles and more comprehensive bibliographies leading toward their major papers — articles such as are submitted to professional journals. Trips will be made to the libraries in Lansing and Ann Arbor in order to obtain bibliography items and articles not available at Calvin and to gain first-hand information about and experience in university libraries. *English 30, Miss H. Ten Harmse.*

THE PSYCHOLOGY OF SEX DIFFERENCES. This course examines recent research findings on sex differences with particular reference to the psychology of women. Topics will include the development of sex differences, cognitive style, achievement motivation, sex-role stereotyping, and the comparative contribution of nature and nurture to sex-differences. Format will be lecture-discussions, and requirements will include the gathering and analysis of questionnaire data in a project shared by all students participating. Prerequisites: Psychology 151 plus at least one other psychology course. *Psychology 10, Mrs. M. Van Leeuwen.*

RADICAL VS. ORTHODOX ECONOMICS: CURRENT DEBATE ON ECONOMIC THEORY AND PROBLEMS. Although there are significant disagreements on policy matters between economists (e.g., between Paul Samuelson and Milton Friedman), the vast majority accept the same basic

models concerning the economy and share many of the same presuppositions concerning the role of economists. In particular they accept the capitalist system as the basic framework in which to attempt solutions to social problems. In recent years a group of economists that rejects these shared presuppositions and models of the "orthodox" economist have become more prominent; these "radical" economists say that the orthodox models beg many of the most important social questions, and they often assert that the capitalistic system itself is the cause of many of the social problems. Many, but not all, of them are Marxist or neo-Marxist in orientation. The course will study their critique of orthodox economics and their alternative models by comparing the analysis of the two groups on such issues as inflation, unemployment, income distribution, concentration of economic power, and international economic relations. One goal of the course will be a Christian evaluation of both radical and orthodox economic theory. Readings from works of authors in both "camps" will be assigned and discussed in class. Satisfies departmental concentrations and, with additional work prior to the Interim, may satisfy the core requirement. Prerequisites: Economics 151 or permission of instructor. *Economics 11, Mr. G. Monsma.*

THE RADICALS OF THE PROTESTANT REFORMATION. A study of major figures and movements within the left-wing of the Protestant Reformation. The course will deal primarily with the development of the Anabaptist and Spiritualist movements, with some consideration also being given to the Revolutionaries and the Anti-Trinitarians. Each student will present a paper and perhaps an oral report and will be expected to do reading in assigned books. *History 31, Mr. F. Roberts.*

REFLECTIONS OF A PEOPLE: MODERN QUEBEC THEATER. One of the most outstanding features of recent French-Canadian culture has been the emergence and growth of a distinctly *québécois* theater which ever since its origin in the late forties has developed both as a valid art form and as an important aspect of the French-Canadian mind and civiliza-

tion. In turn, it has cultivated French-Canadian self-awareness and self-esteem. We propose to study the history and the present state of that theater and to examine closely the work of six playwrights. Readings, lectures, and films will be in French. Prerequisite: French 201. *French 13, Mrs. C.-M. Baldwin.*

RESEARCH AND INSTRUMENTATION IN STRESS PHYSIOLOGY. The class will travel to two or three exercise physiology laboratories at various Midwestern universities. The students will tour, study, and participate in exercise (stress) testing. Time will also be spent in seminars and data analysis. Fee for travel. *Physical Education 30, Mr. J. Timmer.*

REVIEW GREEK. Daily review sessions for students who have completed Greek 101, with an afternoon section for those whose regular interim course is in the morning and a late morning session for those with afternoon Interim courses. Non-credit. *Greek 06, Mr. R. Wevers.*

SAINTS OR SINNERS: THE CHRISTIAN'S SELF IMAGE. This course is a study of the self-images of Christians in a variety of traditions and an analysis of the various factors which influence them. The Reformed tradition, for example, taught that "life is nothing but a constant death" and ". . . for such a worm as I." We will attempt to ascertain what are the typical self-images of Christians in the Reformed and other traditions and what psychological, sociological, and theological factors contribute to these self-images. We shall also try to develop a positive Biblical Christian self-image. *Interdisciplinary 119, Mr. L. Teitsma, Mr. L. Vos.*

SEMINAR IN ENERGY SOURCES. This course will begin with the basic physics needed to understand energy. This will be followed by a study of energy demand in the world with special emphasis on the situation in America. Those energy sources currently being exploited to meet that demand will be treated in detail. The reserves of these sources and the rates of their depletion will be examined. Energy sources not currently being tapped but which show promise for the future will be discussed. Consideration

will be given to the potential for energy conservation and the effects of energy consumption on the environment. A selection of topics drawn from the major areas above will be covered in depth in student seminars. A seminar and one major paper on the seminar topic is required of each student. This course has no prerequisites. It satisfies the core requirement in physical science and the science studies requirement for teachers. *Interdisciplinary 112, Mr. A. Kromminga.*

SIX CONTEMPORARY AMERICAN POETS. Ammons, Bly, Creeley, Dickey, Rich, Wilbur. These are poets who are currently held in high regard, and they represent various stylistic and thematic strains in contemporary American poetry. Discussion method; course paper. *English 15, Mr. C. Walhout.*

SPORTS AND THE MEDIA. The main purpose of this course is to acquaint the student with planning for and the actual reporting of a sports event using the media (newspaper, radio, T.V.). Actual experience in the simulated production of a radio broadcast for a basketball game, and actual reporting of a sports event for the newspaper will be part of this course. The background work and production that goes into a sports telecast will be thoroughly investigated. Field trips, lectures, written reports. *Physical Education 13, Mr. D. Vroon.*

SUPERVISION OF LABORATORY WORK IN BIOLOGY. An opportunity to gain valuable experience preparing materials for biology exercises while assisting a group of less experienced students to do experiments in biology (Biol. 21). Students will work closely with the instructor of the course and will be responsible for a team of students. Prerequisite: junior or senior biology major status or equivalent. *Biology 30, Mr. Ten Broek.*

A TALE OF THREE CITIES: URBAN GEOGRAPHY AS EMBEDDED IN CHICAGO, GRAND RAPIDS, AND DETROIT. A study of what constitutes a city, its historic role, its changing demographic, transportation, and commercial patterns, as well as the differing life-styles of urban areas. Changing urban patterns and functions

will be analyzed in terms of traditional as well as emerging models. The course will include a two-day field trip to either Detroit or Chicago, lectures, readings, films, and the writing of papers on selected aspects of the cultural, physical, or economic geography of one of these three cities. No prerequisites; Geography 101 would be desirable. Fee to cover travel costs. *Geography 10, Mr. G. Oosterman.*

A TALE OF TWO REVOLUTIONS. A comparative study of the American and French revolutions of the late eighteenth century. This comparison will focus on three questions especially: First, to what extent did the example of the American Revolution inspire and instruct the French in their own revolutionary venture several years later? Second, does a comparison of these two revolutions support the notion that revolutions generally undergo a fixed number of stages, such as a "honeymoon" stage, the rule of the moderates, a "terror", and a "thermidor"? Third, are the two revolutions also similar in terms of their aims and actual accomplishments, or are they fundamentally different? The last question will entail a discussion of the often heard contention that the American Revolution was a "conservative" and somewhat Christian revolution in contrast to the French Revolution, which was radical and secular. The course's format will be that of lectures and discussions; the main requirement will be a paper on a specific aspect of the overall comparison; and the basic reading will be in key comparative studies such as R. R. Palmer's *The Age of the Democratic Revolution* and Crane Brinton's *The Anatomy of Revolution*, as well as in the literary works of some contemporaries whose activities and interests touched both revolutions, such as Thomas Paine and Edmund Burke. *History 11, Mr. D. Van Kley.*

TEACHING SOCIAL STUDIES THROUGH FOLK MUSIC. This course has been planned with the following assumptions. 1. Everyone can be involved actively in folk music. 2. Folk music communicates important information about people that textbook prose tends to miss. 3. Participation in folk music provides important variety for classroom procedures in the learning of social studies at all grade

levels. It is planned for education students who expect to teach social studies at *any* grade level rather than for music majors. Ability to sing on pitch and to play or sing *simple* melodies from musical notation are helpful but not required. Class time will be used for singing and listening to folk music, explanation of the musical characteristics and social uses of folk music, demonstration of curriculum materials that integrate social studies and music, student research reports, and perhaps some folk dancing. Students will research sources in the library and curriculum center to find folk music for selected social studies units, will memorize selected folk songs, will critically review commercial curriculum materials, and will lead the class in folk singing. Every class and every assignment will involve extensive, first-hand contact with folk music, either on recording or in musical notation. No prerequisites. *Music 30, Mr. D. Topp.*

THEOLOGY OF THE CITY. A study of contrasting views on the meaning of "the city" as a symbol of our Western culture, based primarily on a critical analysis of an intriguing cluster of contemporary works written from differing theological perspectives. For example: Harvey Cox, *The Secular City*; Jacques Ellul, *The Meaning of the City*; Dennis Clark, *Cities in Crisis*; and Francis Schaeffer, *Death in the City*. Assigned readings, reports, individual and group projects, class discussions, limited interchange with Sociology 12, No Place to Lay His Head: Sociology of Homelessness, observations in the city (Grand Rapids and Chicago). *Interdisciplinary 304, Mr. G. Spykman.*

THE THOUGHT OF JACQUES ELLUL. This course seeks to examine and study the writing of the French Reformed sociologist and theologian Jacques Ellul. In particular, it will deal with his books *The Meaning of the City, the Political Illusion, The Politics of God and The Politics of Man, Propaganda, and The Technological Society*. Each student will be expected to complete a major research paper dealing with some aspect of Ellul's thought. Ellul's writings cross over the disciplines of sociology, theology, politics, and philosophy. Students taking the course should therefore be majoring in

one of these disciplines and should have supporting course work in at least one of the other disciplines mentioned in the preceding sentence. *Interdisciplinary 302, Mr. P. Henry.*

VALUE EDUCATION. This course will correlate the developmental learning theory of Jean Piaget and the moral developmental theory of Lawrence Kohlberg. The study provides the student with a scheme, reflecting a Christian perspective, for evaluating moral dilemmas, to cope with such questions as: Should rules and/or laws be violated? If sex is natural, why is *Playboy* an unfit publication? Do Christian schools and Sunday schools provide opportunity for moral education? Isn't truth always relative? Lectures will be the dominant mode of presentation. Student papers will be presented during the last few sessions. An extensive bibliography of reading in this area will be available for student research. *Interdisciplinary 115, Mr. D. Holquist.*

THE VISIBLE SPECTRUM: COLOR. A descriptive and experimental course in the physics of color, the psychological effect of color, and the social use of color in various societies. In additions to historical and other readings, students will develop two and three dimensional projects utilizing and testing the general principles which have been identified. Prerequisite: Art 207. *Art 10, Mr. N. Matheis.*

VISUAL HUMOR. An incursion into the nature and history of humor, concentrating on its visual expressions, with particular concern for the relationship of humor to Christianity, in both its theological and traditional aspects. Visual humor will be studied in cartoons, movies, photography, television, advertising, and other forms of visual art, and students will work with some of these techniques, particularly film making, photography, and others that are within their skills. Lectures, discussions, demonstrations, movies. Each student will develop a research paper or do an appropriate work of art. *Interdisciplinary 103, Mr. G. De Blaey, Mr. R. Jensen.*

WATER: THE STUFF YOU DRINK IS A "CHEMICAL". A detailed study of the

chemical and physical properties of water, one of the most common and important chemical substances. Topics include: water as reactant or product in chemical reactions, water as a solvent, the role of water in acid-base chemistry, natural waters, polluted water, introduction to oceanography. Lectures, readings, reports, and about five afternoons of laboratory work. May be applied to a teaching major or minor or a science studies group concentration. Prerequisite: a course in high school or college chemistry. *Chemistry 13, Mr. H. Broene.*

WELDED METAL SCULPTURE. A specialized course demonstrating the use of gas, arc, and spot welding to develop sculptural forms. For students who have demonstrated skills in sculpture. Readings, lectures, demonstrations and exhibits, discussions, critiques, and assigned projects. Material costs of approximately \$20. Prerequisite: Art 310. *Art 33, Mr. S. Vander Werf.*

THE WITCH OF AGNESI — AND HER FRIENDS. Some of her friends are the Cardioid, the Trochoid, the Lemniscate, the Cissoid, etc.; a host of others could be mentioned. Each of these is really nothing more than graphs of interesting sets of points in the plane, and often are generated according to a simple geometric rule. This interim course will study the geometry of some of these curves using for the most part high school algebra methods. The course will be launched by first considering the straight line and the conics, with interesting applications in space and orbit problems. The study of Polar Coordinates and simple Coordinate Transformations in the plane will be extended and applied to the study of some curves and surfaces in three dimensions. A variety of interesting curves and surfaces will be studied both for their geometric and for their considerable aesthetic appeal. This course is designed for all, except those who have "hardened their hearts" against seeing the beauty in some simple mathematics. *Mathematics 13, Mr. J. Kuipers.*

WOODEN SHOES IN AMERICA, THE CHRISTIAN REFORMED CHURCH IN

AMERICAN CULTURE. The Christian Reformed Church owes its existence to two nineteenth century Calvinistic secession movements in the Netherlands. Although relatively small, its goal, in keeping with its Calvinistic stance, is to lay the claims of Christ on every area of life and make substantial impact upon its environment. This course is designed to examine the responses of the Christian Reformed Church to twentieth century problems and challenges — racism, war and pacifism, premillennialism, ecumenicity, and the like. Efforts will be made to ascertain what impact has been made or attempted and what Biblical and confessional bases are claimed for its actions and witness. Students will do research work in synodical acts and in Bible commentaries and will be asked to assess the effectiveness of CRC contributions to problem areas. *Religion 10, Mr. J. Bratt.*

WORDS, WORDS, WORDS. A wide-ranging study of diction calculated to increase the student's awareness of the meanings of words, both in isolation and in certain contexts. Besides dealing with word origins and usage, the course will include the study, collection, and composition of such linguistic phenomena as euphemisms, malapropisms (including the sub-species Archie-Bunkerisms), spoonerisms, puns, Tom Swifities, higgledy-piggledies, palindromes, acrostics, and whatever interesting oddities may surface in the course of the study. Open to all who have successfully completed English 100 or have otherwise satisfied the requirements. Students with some background in a foreign language are particularly invited, but the chief requisite is an interest in and respect for language. A paper is required. *English 14 Mr. R. Tiemersma.*

WORK-STUDY INTERIM IN WASHINGTON, D.C. A work-study program in Washington, D.C., for a select group of students. Students will be placed in Congressional and Senatorial offices for a forty-hour work week. Evening seminars led by government leaders representing various departments, bureaus, and agencies. Students must be in Washington from January 7 through January 31. May be applied to departmental and so-

cial studies concentrations. Prerequisites: sophomore, junior, or senior standing, three courses in political science, a 3.0 cumulative grade point average, and approval of the department. A fee of \$300 is required. *Political Science 20, Mr. De Borst.*

WORLD HISTORY IN HISTORY. An investigation into the problems of understanding, writing, and teaching world history and a study of the way in which world history has been and is being written. Students will read, analyze, and discuss some of the major attempts by Westerners to write the history of the world. Among the authors we will read will be Bossuet, Voltaire, Spengler, Toynbee, and William McNeill. Issues to be discussed are: the problems peculiar to the writing and teaching of world history (organization, periodization, criterion for selection, philosophic preconceptions, and the like). There will be reports or papers and an examination. Prerequisite: History 101 or 102. *History 32, Mr. E. Van Kley.*

WORLDS IN COLLISION — IDEAS IN CONFLICT. This course will examine and evaluate the writings and ideas of Immanuel Velikovsky. Students will do this study from the perspective of their major, whatever that may be. Velikovsky's writings deal with ideas and topics from physics (astronomy), history, (especially ancient history of Egypt and Israel), and geology. His impact on society and science attracts the interest of sociology, psychology, philosophy, religion and the-

ology, and literature. Everyone will read *Worlds in Collision* and at least one other major work by Velikovsky. Additional reviews, journal articles, and recordings of conferences on Velikovsky will be assigned. The major activity of the course will be a detailed examination and evaluation of one idea from Velikovsky's writings or one aspect of his impact on science and society. Each student will be expected to complete such a project, and submit both an oral and a written report. For juniors or seniors. *Interdisciplinary 301, Mr. C. Menninga.*

WORLD WAR I AND ITS TITANS. A study of World War I based primarily on the memoirs and biographies of the statesmen, generals, soldiers, and civilians who participated in it and who wrote of their grandeur and their misery. Class reports and a course paper are required. Satisfies social studies concentrations. *History 20, Mr. E. Strikwerda.*

THE YOUNG CHILD — A LINGUISTIC GENIUS. From cooing and babbling to mature speech and language — a remarkable achievement over a few short years. This course will consider the phonetic, syntactic, and semantic aspects of language acquisition and development in the young child, and the various theories which seek to explain these developments. Students will participate in simple empirical investigations and will analyze data which they have collected. Prerequisite: Psychology 204 or equivalent. *Psychology 31, Mr. R. Stouwie.*



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