



Calvin College

The college of the Christian Reformed Church

The catalog for 1985-86

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CALENDAR

The Fall Semester 1985

SEPTEMBER	3	Tuesday	Faculty conference
	4	Wednesday	Residence halls open
	5-7	Thursday-Saturday	Orientation and registration
	9	Monday	First semester classes begin 8:00 a.m. Convocation 9:45- 10:40 a.m.
NOVEMBER	6-7	Wednesday, Thursday	Reading recess and spring/interim advising
	8-19	Friday-Tuesday	Registration for interim and spring semester for all currently enrolled students
	25	Monday	Friday class schedule in effect
	26	Tuesday	Thursday class schedule in effect
	27	Wednesday	Thanksgiving recess 10:00 p.m.
DECEMBER	2	Monday	Classes resume 8:00 a.m.
	12	Thursday	Classes end 10:00 p.m.
	13	Friday	Reading recess
	14	Saturday	Examinations begin 9:00 a.m.
	19	Thursday	Examinations end 9:30 p.m. Christmas vacation begins

The Interim 1986

JANUARY	7	Tuesday	Interim term begins 8:00 a.m.
	29	Wednesday	Interim term ends 5:00 p.m.

The Spring Semester 1986

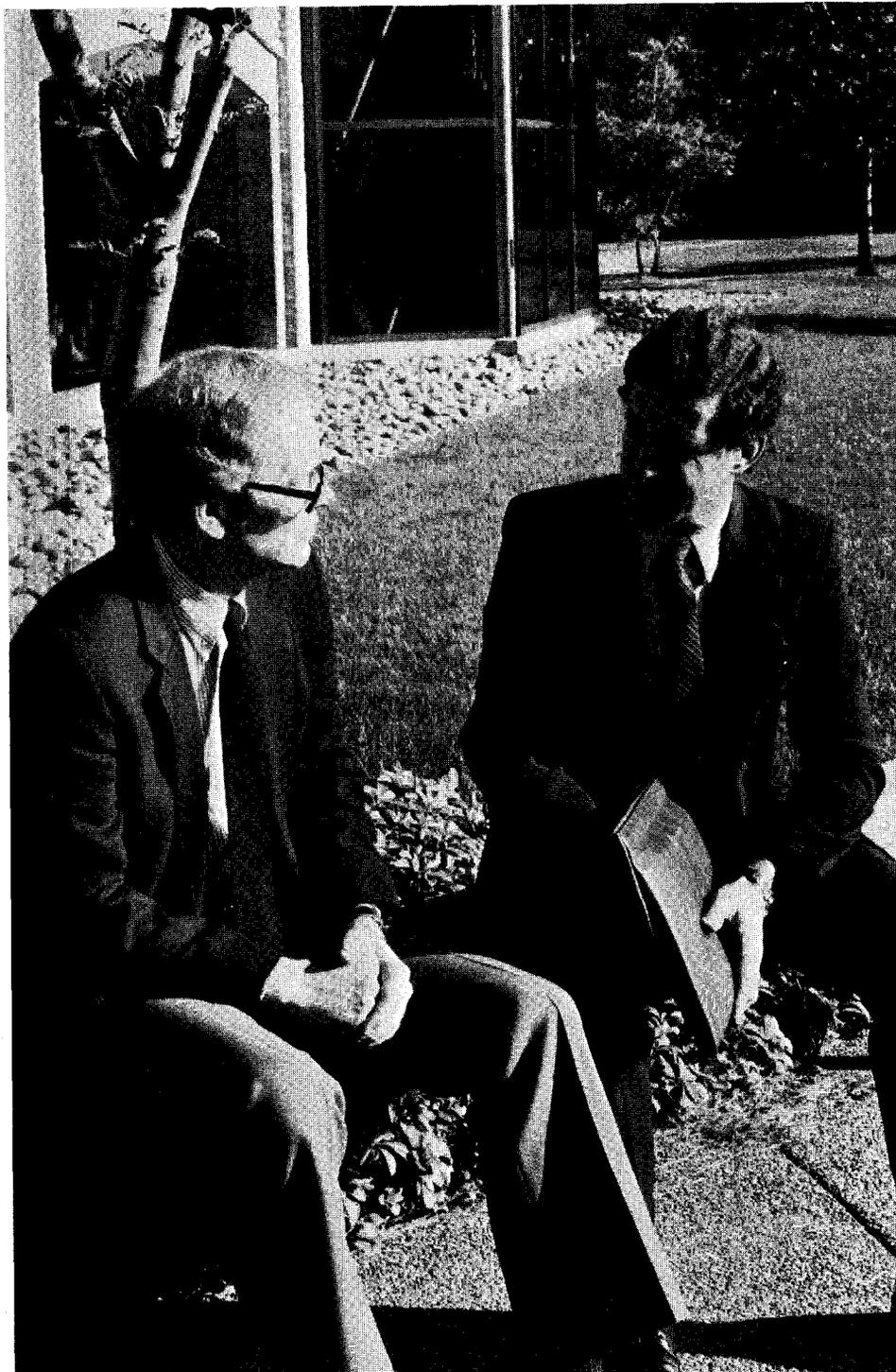
FEBRUARY	3	Monday	Spring semester classes begin 8:00 a.m.
MARCH	27	Thursday	Spring vacation begins 9:00 p.m.
APRIL	8	Tuesday	Spring vacation ends 8:00 a.m.; Friday class schedule in effect
MAY	1	Thursday	Honors Convocation
	14	Wednesday	Reading Recess
	15	Thursday	Examinations begin 9:00 a.m.
	21	Wednesday	Examinations end 4:30 p.m.
	24	Saturday	Commencement 3:00 p.m.

The Summer Sessions 1986

MAY	27	Tuesday	First session begins 8:30 a.m.
JUNE	18	Wednesday	First session ends
JUNE	26	Thursday	Second session begins 8:30 a.m.
JULY	4	Thursday	No classes
	21	Monday	Second session ends
	22	Tuesday	Third session begins 8:30 a.m.
AUGUST	13	Wednesday	Third session ends

The Fall Semester 1986

SEPTEMBER	2	Tuesday	Faculty conference
	3	Wednesday	Residence halls open
	4-6	Thursday-Saturday	Orientation and registration
	8	Monday	First semester classes begin 8:00 a.m.



Provost Gordon L. Van Harn and President Anthony J. Diekema

THE MISSION OF THE COLLEGE

The history of the college and its objectives

CALVIN COLLEGE is a college of the Christian Reformed Church, a century-old denomination 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 Apostles 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 Bres, 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 learning 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 pre-theological 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 Department, 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 approximately 4,000.

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, thus 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. The William Spoelhof College Center, the Bergsma Natatorium, the Knollcrest East apartment complex, and the recent addition to the Commons have been added, thereby providing for the potential of 4,000 students with over half living on campus. The Johanna Timmer residence hall was opened in September, 1981, and the H. H. Meeter Center for Calvin Studies in 1982.

Library

The Calvin Library, at the center of the campus, serves students of both the college and the seminary. Its 365,000-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 2,325 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 36,000-item collection of microfilm, microfiche, and microcards. The library, which is air conditioned, can seat 1,100 persons, mainly in individual study carrels and at tables. There are also seminar rooms and a spacious lounge.

Several special collections are housed in the library. The H. H. Meeter Calvinism Research Collection, located on the third floor of the library, is one of the most extensive collections of books and articles on John Calvin and Calvinism available anywhere. 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, is located on the first floor of the library. The Calvin Library is a partial depository of government documents, holding approximately 100,000 items. The Cayvan Room with its many recordings and tapes is available for both the study and enjoyment of music.

Computer Center

The Calvin College Computer Center is located in the William Spoelhof College Center. The center provides computing services to support instruction and research at the college as well as services to administrative offices of the college and the agencies of the Christian Reformed Church. The principal installations are two PRIME 750 computer systems and one PRIME 400 system.

One PRIME 750 system consists of a central processing unit with three million bytes of error-correcting memory and 600 million bytes of disk storage. The PRIME 400 system contains a million and a half bytes of error-correcting memory and 600 million bytes of disk storage. These systems also include two one-thousand line-per-minute printers, a thousand card-per-minute card reader, and two nine-track tape drives. They also have communications hardware that currently supports in excess of fifty-five remote terminals. These systems provide

service for college administrative offices and are also connected by a communications link to the denominational headquarters of the Christian Reformed Church.

The second PRIME 750 system consists of a central processing unit with three million bytes of error-correcting memory and 300 million bytes of disk storage. It provides service to Calvin students and faculty. In addition to terminals used by faculty members, fifty remote terminals are available at various locations on campus for student use. Languages supported include FORTRAN, COBOL, BASIC, PASCAL, and LISP. Several special software packages are also available including SPSS and Minitab. Several microcomputers are also used by students and faculty at various locations on campus.

Instructional Resources Center

The college maintains an Instructional Resources Center in Hiemenga Hall which serves the instructional programs of the entire college. It includes audio-visual services, the audio-visual laboratory, a graphics production center, a television studio, the Language Laboratory, cable television distribution service, and the Curriculum Center, which contains a wide variety of textbooks and demonstration teaching material useful to teachers and prospective teachers.

Aim and Purpose

Calvin College aims to provide an education that is Christian and is shaped by the Christian faith as reflected in the Reformed standards. This finds its broadest expression in the study of the various liberal arts where students are encouraged to develop value judgments which are grounded in the knowledge of man's relationship to God, to himself, to his fellowman, and to the world, and to acknowledge the Lordship of Christ over all. It is in this setting of Christian commitment that the college seeks to promote sound scholarship, earnest effort, and an obligation to use one's talents fully in response to a divine calling.

The end of such Christian commitment is the Christian life. Informed and mature Christian faith calls for a life of action and involvement. It seeks personal piety, integrity, and social responsibility. It recognizes that service to God and to one's 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, Calvin College provides many opportunities 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 involve participation in local churches.

The faculty members subscribe to the creedal position of the denomination, and strive, in their teaching and personal relations, 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 from other evangelical Protestant churches, but also others who are interested in the benefit of the Christian atmosphere and Reformed character of the academic programs of the college and in the aims of the college.

Government

The corporate name of the college is CALVIN COLLEGE AND SEMINARY. It is governed by a single board of trustees which represents the ecclesiastical divisions of the church, arranged along geographical lines. The administration, the staff, the student body, and the physical facilities of the college and the seminary are largely separate and independent. The membership of the board is constituted of representatives elected by the various classes and approved by synod and regional trustees 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.

Compliance with Legal Requirements

Calvin College, in accordance with Title VI of the Civil Rights Act of 1964, operates in a non-discriminatory manner with regard to race, color, or national origin. Furthermore, as required by Title IX of the 1972 Education Amendments, Calvin College does not discriminate on the basis of sex in its educational programs, activities, or employment policies. Calvin College also provides equal opportunity for qualified handicapped persons in accordance with the requirements of Section 504 of the Rehabilitation Act of 1973. Instructional and other physical facilities are readily accessible to handicapped students and special rooms in the residence halls are designed for barrier-free living. Mr. Thomas Hoeksema of the Department of Education is the adviser for handicapped students. Inquiries and appeals regarding compliance with these federal requirements should be directed to Mr. Henry De Wit, Vice President, Calvin College Business Office, as Civil Rights, Title IX, and Section 504 coordinator. Student appeals will be heard by the Academic Standards Committee.

Accreditation and Affiliation

Calvin College is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and 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, the Michigan Academy of Sciences, Arts, and Letters, and the American Mathematical Society. It is a member of the Christian College Coalition and an affiliate member of the American Society for Engineering Education.

Calendar, Summer School

The academic calendar at Calvin College forms the typical 4-1-4 plan consisting of two semesters, each approximately four months in length, plus a one-month interim term in January. During each of the two semesters, students

normally take four courses and during the interim, one course. All courses are of equal academic value. 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 consecutive three and a half week sessions; a student is permitted to register for one regular course during each session.

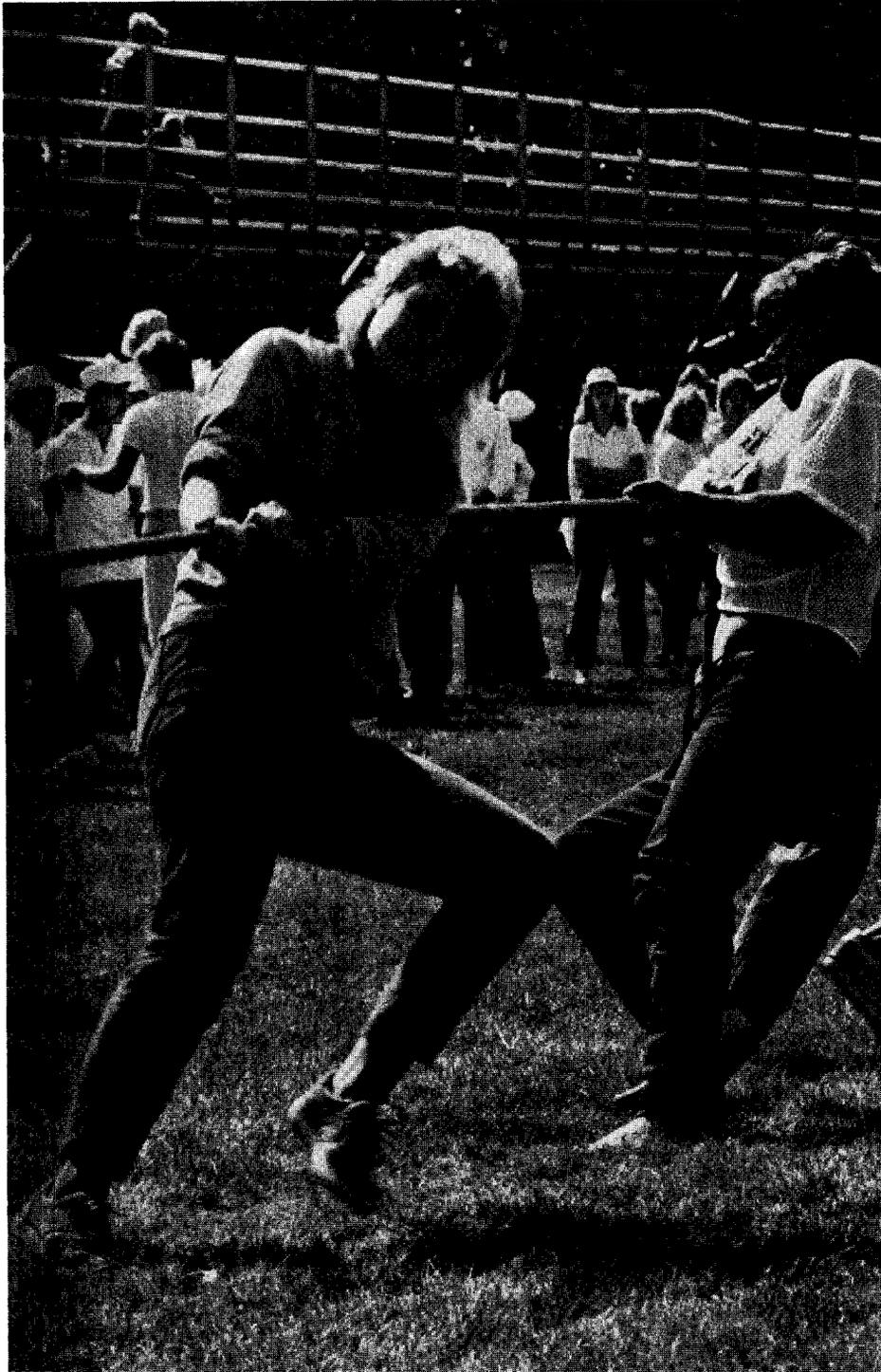
The Calvin Alumni Association

The purpose of the association is to support Christ-centered education through service to Calvin and its alumni and friends.

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 Calvin Seminary for one year and those who teach at the college or seminary are also considered members of the association. There are currently more than thirty-four thousand Calvin alumni around the world, many of whom are part of local alumni chapters.

The Calvin Alumni Association is governed by a board of sixteen persons who serve for three years. The board meets five times during the year. Board meetings are open to all alumni, and a national board meeting is held each year at Homecoming. The work of the Association is facilitated by the Director of Alumni Relations.

The association sponsors *Spark*, the alumni magazine; services to alumni chapters; career networking systems; numerous programs, including Summerfest (Calvin's vacation college); and contributes to faculty research projects. The alumni-financed program of freshman grants and upper-division scholarships is of special interest to students. Information concerning all of these may be obtained from the Alumni Office.



STUDENT LIFE AND SERVICES

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, Monday through Friday mornings. The main chapel is held in the Fine Arts Auditorium, but a variety of other services such as Fellowship chapel, 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.

Student Conduct and Regulations

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 the Christian goals and standards of the college but also 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* booklets describe the regulations and their implementation.

The *Discipline Code*, approved by the Faculty, the Student Senate, and the Board of Trustees, is the official document which spells out college regulations and judicial processes. A copy of this code is available at the Student Affairs Office.

While the *Code* does not seek to develop a detailed and exhaustive summary of what a student may or may not do, it does contain, in addition to Christian principles of behavior, a list of proscribed conduct. Among those proscribed actions are all kinds of dishonesty, acts of violence, disruption of institutional activities, theft, unauthorized entry, sexual misconduct, use of alcoholic beverages and drugs on campus and at institutionally sponsored activities, and profane and obscene language. Sanctions for misconduct range from verbal warning to expulsion.

The judicial processes require a hearing before the Dean of Men or Women or before the All-Campus Discipline Committee, guarantee student rights to testify, to examine evidence, and to enlist counsel at the hearings, and provide for appeal to higher judicial bodies.

Housing

Freshman and sophomore students under 21 years of age not living at home are required to stay in the Calvin College residence halls. Juniors and seniors (students who have successfully completed sixteen or more courses), married students, 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. Information on available housing and further interpretation of these rules are 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. Theatrical productions including Thespians activities are sponsored by the Department of Communication Arts and Sciences. 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 seeks to arouse interest in the various graphic and plastic arts.

The Student Senate, through several of its committees, provides a program of speakers, films, and entertainment for the entire campus. Other public performances sponsored by various academic departments, by the Alumni Association, and by community groups are presented on campus.

Intercollegiate and Intramural Athletics and Recreation

Intercollegiate athletics play an important role in student life at Calvin. Calvin is a member of the Michigan Intercollegiate Athletic Association (MIAA) and the National Collegiate Athletic Association (NCAA). Calvin men compete in cross-country, golf, basketball, soccer, swimming, ice hockey, baseball, track, and tennis. Calvin women compete in cross-country, field hockey, volleyball, basketball, swimming, track, softball, and tennis.

Intramurals are also an important phase of the physical education program and provide students with the opportunity to participate throughout the year in a variety of programs.

Both indoor and outdoor facilities are available for recreation whenever classes or scheduled contests are not being conducted. The Physical Education Building and Natatorium are usually open for student recreation daily except Sunday until 9:30 p.m.

Student Senate and Other Organizations

The twenty-member Student Senate plays an important role in the life of the college. Not only does it serve as the official voice of the student body, but it also supervises most student activities. It oversees the budgets of student organizations and concerns itself with student publications, homecoming, the film arts, the campus radio station, 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 organizations exist on campus, many of which are related to particular academic departments. All organized clubs and similar groups must have a faculty sponsor and must have formal approval through the dean of student life.

In addition, the Student Senate sponsors the Student Volunteer Service (SVS), a volunteer service group rooted in Christian social responsibility, which is directed by Mrs. Rhonda Berg. It provides assistance to local schools, to non-profit agencies, to senior citizens, and to the community in general and provides a great variety of experience for the students involved. Students tutor children and adults, assist in special education, serve as big brothers and sisters, support art and recreational therapy programs, provide transportation for those who need it, and offer moving and home maintenance services for those in need.

Health Services

The college provides limited medical service for all students. There is no fee for office calls but there are minimal charges for medication. The health center, located in the basement of Heyns Hall, is maintained by a full-time nurse and a team of college physicians who hold 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. Family plans for married students are also available. Information is available in the Business Office.

The Calvin College Mobile Blood Drive, sponsored by the SVS program and chartered by the Grand Valley Blood Program, conducts four blood drives each academic year in the college 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.

Broene Counseling Center

The Broene Counseling Center offers counseling in the areas of career and personal concerns and life enrichment. The staff provides assistance for students searching for careers by helping them recognize their own resources and talents, and by exploring with them the variety of careers available and appropriate for them. The career resource area contains a wide selection of career information including two computerized career informational systems. The staff also offers individual and group counseling and provides enrichment programs in such areas as interpersonal relationships, self-understanding, Christian self-image, communication skills, stress management, and career planning. Student concerns are kept confidential.

Counseling, Advising, and Orientation

All new students are required to participate in a program of orientation held just prior to registration. Guided by upperclassmen serving as orientation leaders, they will meet key faculty members and administrators, receive information about college activities and facilities, and obtain registration materials. The orientation schedule is mailed to new students during the month before registration.

Shortly after registration freshmen are assigned advisers from the faculty. These faculty members will keep in regular contact with them during their freshmen year and will assist them in making decisions about courses and programs.

After their freshmen year, students are expected to ask a faculty member in their field of interest to assist them in developing appropriate academic programs and in other matters. By the end of the sophomore year, student must work out counseling forms defining programs which will lead to graduation. This usually requires declaring a major in a given department or group of departments. The

chairmen or some other members of departments at the time become the students' advisers. Whenever a student changes his major or advisor, he should notify the Director of Advising, Mrs. Evelyn Diephouse, who is also available to assist students with advising problems.

Additional general and specialized services are provided for all students. The college chaplains, the deans of men and women, and the dean of student life are available to counsel students. The Broene Counseling Center provides professional help for career or personal problems.

Use of Motor Vehicles

Motor vehicles owned or operated by Calvin students must be properly registered in the Security Office and must carry an official college vehicle permit. Motor vehicles may be parked only in approved student parking areas and the drivers will be fined if they park elsewhere. Because parking areas are limited, parking regulations are enforced stringently. The driving regulations and requirements of the Michigan Motor Vehicle Code apply to all driving on the campus.

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 Placement Office assists graduates and alumni in securing employment. All seniors and graduates are eligible for this service and are encouraged to establish a credential file in the Placement Office. There is a \$10 fee for the service.

Seniors in education are assisted in developing credentials early in their final year. At their request credentials are forwarded to school officials who are considering candidates for teaching positions. The Placement Office lists 1,500 teaching vacancies annually and hosts administrators who desire to interview candidates on campus.

The Placement Office also assists seniors and alumni in finding post-graduation employment in fields other than teaching. Job opportunities are posted, and through a monthly publication, *Placement Profiles*, information that is of interest to those seeking employment is publicized. The *Intra-Campus Bulletin* and *Placement Profiles* list the times when prospective employers will conduct interviews. Personal counsel is given in job-search techniques such as resume writing and interviewing skills. The Placement Office maintains a Placement Resource Center which makes available information on employers and employment in various parts of the United States, in Canada, and in foreign countries, as well as in federal and state governments. Seniors who will be seeking the assistance of the Placement Office are asked to register for placement services early in their final year at Calvin.

The college maintains information on graduate school programs and on such competitive national fellowships as the Rhodes scholarships, the Marshall fellowships, the National Science Fellowships, and the various Fulbright grants. Interested students should consult the chairman of their major department or Mr. C. Miller, the assistant to the provost.



ADMISSION AND STANDARDS

Regulations concerning admission

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 perspective 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 or a school official, and the particular ability of Calvin to be of service to him will be considered. The college admits students of any race, color, and national or ethnic origin.

Prospective students requesting application material will be sent the forms necessary to apply for both admission and financial aid. They will be notified concerning admission as soon as the Office of Admissions receives the following documents:

1. *A completed application form*
2. *Academic transcripts from high schools and colleges previously attended*
3. *Entrance examination results, preferably ACT*
4. *The recommendation of a pastor, spiritual counselor, or school official*

Candidates applying for scholarships should take their entrance examinations no later than December. All application forms received later than July 1 must be accompanied by a \$10 late registration fee.

An applicant should be a graduate from an accredited high school and have completed satisfactorily at least fifteen units of college preparatory work, including three in English and two in algebra and geometry. (A unit is the equivalent of five class hours a week for thirty-six weeks in one field.) Specifically, an applicant must present a three-unit sequence from mathematics, the natural sciences, the social sciences, or a single foreign language and at least two units from two other of these fields. The remaining units may be in any courses which count for graduation.

Applicants with high school averages of C+ (2.3) or higher in their college preparatory courses whose ACT-Composite is 16 or higher or whose SAT-Verbal is above 370 and SAT-Mathematics above 390 are normally given regular admission. Applicants with lower grades and scores and with deficiencies in their high school preparation are reviewed individually to find evidence of the ability to do satisfactory college work. Such applicants are admitted under special conditions. This program is described on page 90.

Candidates with strong backgrounds are often able to earn advanced college credit in certain subjects. This may be secured in any of three ways:

1. *A grade of 3 or higher on an Advanced Placement (AP) Examination conducted by the College Entrance Examination Board. These tests are administered on May 5-7, 9, and 12-16, 1986.*
2. *A satisfactory score on any of the Subject Examinations of the College-Level Examination Program (CLEP) of the College Entrance Examination Board. These tests are administered usually during the third week of each month.*
3. *The passing of special departmental examinations at Calvin College.*

Furthermore, students who have completed appropriate courses in high school are excused from certain college graduation requirements. This is most common in foreign language, mathematics, literature, and the sciences. Consult pages 46-48 for a description of the ways high school courses satisfy college requirements.

Because student applications are not considered until entrance examination results have been received, prospective freshmen are advised to take the entrance examination during the spring semester of their junior year or in the fall of their senior year. Canadians may substitute the Preliminary Scholastic Aptitude Test (PSAT) if other tests are not available. Candidates for entrance examinations must apply for them at least a month prior to the testing dates.

The American College Test is normally given 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 1985-86 academic year are October 26, December 14, February 8, April 12, and June 14.

Applicants not able to sit for the ACT may submit Scholastic Aptitude Test results. Subsequently they will be required to take the ACT on campus at the expense of the college. The Scholastic Aptitude Test will be given this academic year on October 12 (Illinois only), November 2, December 7, January 25, March 15, May 3, and June 7. 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.

Although low test scores are seldom used to bar admission to students who demonstrate a desire for a college education, average scores have remained steady in recent years. In 1983 the average high school grade was B (3.11); the average SAT-V was 484 and the SAT-M was 538; and the average ACT-E was 20.9, the average ACT-M was 22.1, and the Composite, 22.3.

After students are formally admitted, they must confirm their acceptance by making a deposit, which is applied to their tuition. For freshmen, the deposit of \$100 is required by May 1 and will be refunded if requested before July 1.

Former students of the college, including students who have been dismissed and applicants who previously had been given papers entitling them to admission but who did not register, must apply for readmission.

Nondiscriminatory Policy as to Students

Calvin College admits students of any race, color, national and ethnic origin to all the rights, privileges, programs, and activities generally accorded or made available to students at the school. The college does not discriminate on the basis of race, color, sex, national and ethnic origin or disability in administration of its educational policies, admissions policies, scholarship and loan programs, and athletic and other school-administered programs.

Transfer Students

Students transferring from other colleges or universities must follow the same procedures of applying for admission as freshmen, and they should have a cumulative grade point average of C (2.0) or higher. A high school transcript and ACT or SAT test results are also required. They will receive credit for work done in accredited institutions, provided the courses were of an academic nature and the students have received an honorable dismissal. 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 and at least one upper-level course in his major to graduate from Calvin.

Transfer applicants who have been admitted must make a deposit by June 1 which will be refunded if requested before July 1.

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.

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 46-48).

English	4 units	
Mathematics	3 units	One year each of algebra and geometry. An additional course in algebra is recommended. Four units are desirable for students entering mathematics-related majors.
Foreign language	2 units	Preferably three; ideally the last unit in grade 12.
Science	2 units	Biology, chemistry, or physics; one with a laboratory. Chemistry and biology are recommended to prospective nurses.
History	2 units	
Electives	3 units	Typing and college preparatory courses.

Admission Under Special Conditions

The college is eager to serve students who show promise of benefiting from a college education even if they do not meet normal admission standards. Those who have not followed a college preparatory program, particularly one including algebra and geometry, should make up their deficiencies during the summer before their freshman year. Approximately 10 percent of the freshman class is admitted conditionally.

Applicants who are at least nineteen 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.

Some applicants with weak high school records and/or low ACT or SAT test scores may be admitted on condition because of other evidence of academic promise. Such students will receive special counsel, must register for four courses, one of which is an Academic Support Program course, are required to participate in the Academic Support Program, and are advised to restrict sharply their involvement in employment, in social life, and in campus activities.

Applicants who meet all 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.

Admission of International Students

Calvin College welcomes international 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 transferring 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 programs they need. The college is authorized under Federal law to enroll nonimmigrant alien students.

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 for whom English is a second language must have an adequate command of English as demonstrated by their performance on either the English Test administered by the English Language Institute of the University of Michigan (ELI) or on the Test of English as a Foreign Language (TOEFL), administered periodically throughout the world by the Educational Testing Service. The TOEFL code number for Calvin College is 1095. Students must have grades of at least 85 on the ELI or 500 on the TOEFL. All such students are admitted on condition and must take English courses each semester until they have successfully completed English 100 and an English literature course, courses required of all students for graduation. (Such students usually can satisfy the graduation requirements in a foreign language with their native language.) The ELI is administered during the

fall orientation week to all students for whom English is a second language and the results are used to place them in appropriate English courses.

Admission to Nursing Programs

Students wishing to become nurses through Calvin may follow either a program that will qualify them to enter the Hope-Calvin nursing program or complete a program that will enable them to transfer to a degree program in a different school.

Those interested in a four-year program leading to a Bachelor of Science in Nursing in the cooperative program with Hope College should follow the normal application procedures for freshmen, indicating their interest in nursing. Transfer students should follow the procedures described for all transfer students.

Visitors and Auditors

Members of the community who are not enrolled as students in any college are invited to register as visitors in most lecture classes. Admission to the college is not required, but each visitor must register with the Registrar's Office before attending class. The fee for each course visited is \$15, which includes campus parking privileges. Courses in accounting, applied art, computer science, English composition and creative writing, foreign language, applied music, speech, and courses in which a laboratory experience is an integral part of the classroom activity are not open to visitors but only to credit-seeking students and auditors.

Most courses are open to auditors, who must be formally admitted to the college and must pay the tuition for auditing, which is half the regular per-course rate. Auditors are expected to attend all classes and participate in the assigned activities of the class. They may take all tests and submit assigned papers for evaluation, but they are not required to do so. Auditors may change their registration from audit to credit only during the first four weeks of the semester; students enrolled in a course for credit may change to audit only during the first four weeks.

Enrollment in Seminary Classes

Full-time college students may, as a 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 Calvin 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 to four and one-quarter course units a semester. The normal course load, however, may range from three to four and three-quarter course units, permitting students to register for quarter courses in

applied music, basic physical education, and drama in addition to a typical load. Non-credit remedial courses are counted as part of a normal load, and students on probation or condition may be required to limit their load to three course units for credit. In exceptional cases a student may apply for permission from the registrar to carry more than four and three-quarter course units. Such an application requires the recommendation of the student's academic adviser or department chairman and the approval of the registrar. To be eligible for consideration the student must have a cumulative grade point average of 3.0, must have received no grades of incomplete during the previous two semesters, and is expected to limit outside employment.

Not more than two units of applied arts courses, except for music majors in certain applied music concentrations, and no more than one course unit of basic physical education may be applied to graduation requirements.

Students with a minimum of seven course units of credit 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 unit 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; F, failure; I, incomplete; W, authorized withdrawal; and N, unauthorized withdrawal. An honor student taking a fifth course may elect to have it graded as S, satisfactory, or U, unsatisfactory.

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; 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 in cooperative programs 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 credit toward the thirty-six required for graduation for each interim course satisfactorily completed. Interim courses carrying core credit are graded according to the traditional letter system and will be included in the student's average.

Auditors are given grades of Au. However, if they fail to attend classes, the instructor will report a grade of W.

Students may alter their schedules during the first week of classes without grades of W being recorded on their records. After that time, grades of W, authorized withdrawal, will be recorded if they leave courses with the written approval of their instructors by December 1 of the first semester or by May 1 of the second. Students who discontinue classes without permission or notification are not entitled to a grade of W but will be given an N, unauthorized withdrawal. This grade is computed as an F in determining a student's grade point average. However, students who withdraw from school at any time with the approval of the dean of women or dean of men and of the registrar will be given grades of W in all courses.

Students may repeat any courses by properly registering for them but must inform the instructor when they are repeating a course. Only the latest grade, whether higher or lower, shall be included in the compilation of a student's cumulative grade point average. It shall be entered on the record preceded by an R. The original grade is not expunged from the record.

If students fail to complete all the required work or to sit for the final examination, instructors may, if they consider a student's reason valid, give a grade of I, incomplete, rather than a grade of F. The grade of I shall be computed as an F in determining a student's grade point average. Students given an I in the fall semester or in the interim must make up the deficiency by May 1 of the following spring semester; if given an I during the spring semester or summer session, they must make up the deficiency by December 1 of the following fall semester. If they fail to do so, grades of F will be entered on their records. A grade of F will be altered only if a student reregisters and retakes the course in which it was given. Grades of I are never expunged from the records. When students complete the work and professors submit the grades, the credits, honor points, and grades become new and separate entries on the record.

Honors, Eligibility

Full-time students with an average grade of A- (3.50) or higher for any semester and a cumulative average of 3.3 or higher will be placed on the Dean's List. 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 50 for details.

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 students access to their records, are available in the Office of the Registrar.

At the end of each term a grade report will be mailed to the home address of each student unless the student files a written request with the registrar that this not be done. Students may obtain a copy of their complete academic records at any time.

Official transcripts are released only when requested by the student. The fee for currently enrolled is \$1 a copy; the fee for former students is \$2. Transcripts

will not be released for students who have failed to meet their financial obligations to the college.

Any student found guilty of dishonesty in any examination or test or in written work of any character is subject to disciplinary action. The normal sanction is a failing grade on the piece of work involved, but a failing grade in the course is also a permissible sanction.

Academic Probation and Dismissal

Each student admitted to Calvin College is assumed to have the preparation, the desire, and the ability to make satisfactory progress toward a degree. In practice, however, some students do not make the progress expected of them, either because they are not willing to devote the necessary time to their studies or because they are unable to make up for deficiencies in their previous academic training. Such students are warned, offered special assistance and vocational counseling, and given an opportunity to improve their records. Failing in that, however, they will be dismissed.

Applicants whose test scores or past records indicate the likelihood that they will experience academic difficulty will be given conditional admission. They will be limited to four courses and required to complete successfully any review courses prescribed by the program advisors. Transfer students whose previous college records are weak will be admitted on probation.

The records of all undergraduate students are reviewed after each semester, and the academic status of full-time students is determined according to the following schedule. The performance of part-time students is judged on the basis of full-time equivalent enrollment.

<i>Semesters of full-time enrollment¹</i>	<i>Minimum Minimum cumulative grade point average needed for continuation</i>	<i>cumulative grade point average needed for good standing²</i>	<i>Minimum credit units completed needed for good standing</i>
1	1.0	1.50	2
2	1.0	1.65	5
3	1.3	1.75	8
4	1.45	1.85	12
5	1.60	1.95	15.5
6	1.75	2.00	20
7	1.90	2.00	23.5
8	2.00	2.00	28

1. Interims are considered a part of the spring semesters for the purpose of determining academic status. Summers may be used to make up deficiencies. If a student discontinues prior to December 1 of the first semester, or prior to May 1 of the second semester, or at any time because of illness, that semester will not be counted. The semesters of enrollment of transfer students include the number of semesters of full-time enrollment at all the colleges combined, but only Calvin grades are considered in determining averages.

2. A student receiving Veterans Administration benefits is placed on academic probation if his GPA falls below 2.0 and must within the next two semesters raise it to 2.0 in order to

continue to be certified for such benefits. Such students must, prior to enrolling for the final four course units, have earned a cumulative grade point average of 2.0. If any student receiving veteran's benefits fails to come off probation within the prescribed probation period, the school will inform the Veteran's Administration. That student will be informed in writing that the Veteran's Administration has been notified.

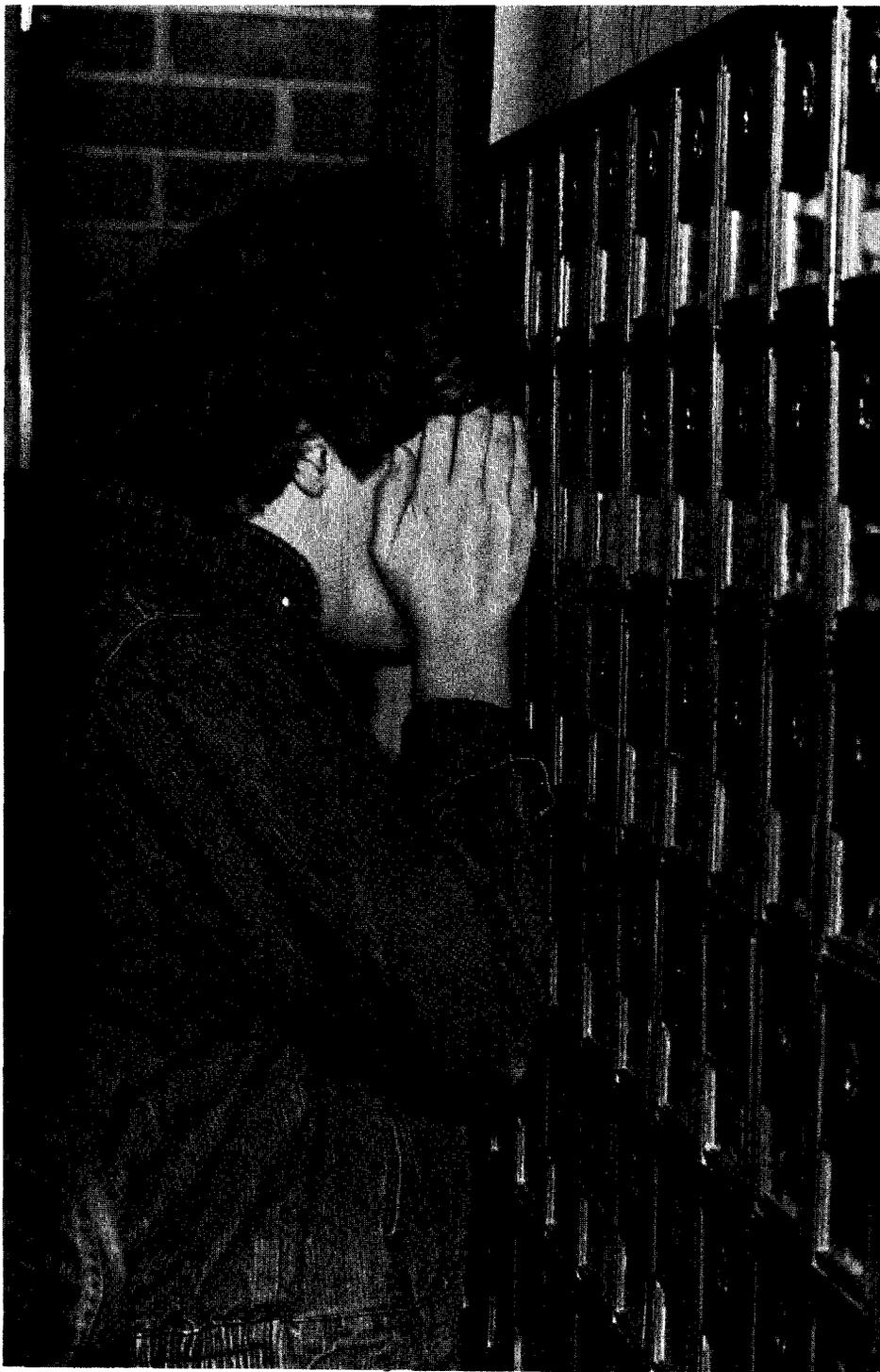
Any student whose average falls below the minimum required for continuation is subject to dismissal. All students permitted to continue but not meeting the requirements for good standing are placed on probation. Freshmen placed on probation are limited to four courses, one of which is an Academic Support course, and required to participate in the Academic Support Program. All students on probation are expected to limit extracurricular activities and part-time employment and to seek help in developing their academic skills either from a faculty adviser or from the staff of the Academic Support Program and must raise their grade point averages above those of the previous semester. Freshmen with admissions conditions outstanding from the previous semester must meet these conditions within a year of enrollment, even if they have achieved good standing after one semester.

Students not permitted to continue may appeal such academic dismissals to the Academic Standards Committee, whose decision is final. One year must elapse before students dismissed for poor academic performance are eligible to petition for readmission. A request for readmission will be reviewed by the Admissions Committee; readmission following academic dismissal will be based upon evidence that the difficulties previously encountered can be overcome and that eventual completion of degree requirements can reasonably be expected.

Application for Degrees and Certificates

In addition to the formal requirements for degrees described in the section on "The Academic Programs" beginning on page 45, students must satisfy certain technical requirements. Normally, they must complete their last year in residence at Calvin. They must also complete a Major Concentration Counseling Sheet and have it signed by their departmental adviser and must meet all of the conditions specified in that sheet. (These sheets normally are completed during the sophomore or junior year.) Finally, they must file a formal application for a degree at the Office of the Registrar not later than the beginning of the semester in which they expect to graduate. If they are completing teacher education programs, they must also file an application for Michigan certification at the same time they apply for a degree or not later than a semester before they complete the certification requirements.

Students desiring to graduate with an honors designation must apply for admission to a departmental honors program and meet those requirements and the general honors program requirements. Consult page 50 for details.



FINANCIAL INFORMATION

Tuition and fees

TUITION FOR THE ACADEMIC YEAR is \$4,980; room and board on campus is \$2,200; and the estimated cost for textbooks and classroom supplies is \$200.

Students taking fewer than four course units of credit in a semester will be charged on a per-course basis, if that results in a lower total charge. Those taking more than 4.75 course units will be charged at the per-course rate for the additional. The interim is considered a separate course for which there is no charge if the student pays full tuition either semester or pays for at least six non-interim courses during the academic year.

Most Calvin College students receive financial assistance from the grant and scholarship programs. A special grant-in-aid is available to members of the Christian Reformed Church in North America which reflects the direct support such students and their families provide the college through the church.

BASIC CHARGES

Tuition, up to 4.75 course units a semester	\$2,490
Tuition, per course-unit rate	670
Tuition, auditing, per course unit	335
Tuition, clinical years, B.S. in Nursing	6,330
Room and board, academic year	2,200

SPECIAL FEES

Visitor fee, per course	15
Art materials fee	20
Directed teaching fee	10
Examination fee (course credit)	20
Examination fee (exemption)	5
Late application fee	10
Late installment payment fee	5
Individual music instruction	
One hour weekly lesson per sem.	270
Half hour weekly lesson per sem.	135
For concentrates, per sem.	200
Vehicle registration fee	10
Residence hall social fee	20
Transcript, for current students	1
for former students	2

DEPOSITS

Housing deposit	50
Physical education locker deposit	5

Full-time tuition covers student activities such as the Student Senate and student publications.

Students are encouraged to pay their tuition, fees, room, and board in full at the time of registration each semester. A payment schedule is available at registration for those students who need to pay in installments. This schedule calls for a down payment at the beginning of each semester 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 \$1,550 for tuition, room, and board; the minimum for non-resident students paying tuition only is \$1,150. Denominational Grants and other financial aid are applied at the beginning of the semester and may be used to reduce the down payment.

Accounts not paid on time are subject to a \$5 late payment fee, and those not paid by the end of the semester will be charged an additional 1 percent per month on the unpaid balance. A penalty fee of \$10 is charged students who have not paid their bills in full, unless arrangements are made with the Business Office by December 15 in the first semester and May 9 in the second. Transcripts are not issued for students owing money.

Prospective freshmen are required to make an advanced tuition deposit of \$100 by May 1; prospective transfer students and those being readmitted must make the deposit by June 1. Part-time students must deposit \$50. These deposits are refundable if a request is made by July 1. Students applying for the interim or the second semester must make the appropriate deposit by November 15 and may apply for a refund before January 1.

If a student withdraws from the college his charges for the semester (tuition, room, board, etc.) will be prorated from the beginning of the semester until his official withdrawal at the Registrar's Office, but in no case will he be charged less than \$25. A student who withdraws from a single course will have his charges reduced only if he withdraws at the Registrar's Office within the first ten weeks of the semester, and his charges will be prorated according to the portion of the ten weeks completed. The financial aid of such students is reviewed and may be reduced.

Scholarships and Financial Aid

Calvin College participates in all federal and state student financial aid programs for which our students are eligible. In addition, the college sponsors a number of its own programs which are coordinated with and used to supplement federal and state programs. Programs sponsored by the college include: (1) academic scholarships designed to recognize students with excellent academic ability and to encourage superior academic work, (2) Denominational Grants which recognize regular contributions to the college through denominational quotas, and (3) need-based grants for students who are not eligible for state or federal grants or who need more grant assistance than state and federal programs provide.

Information about application procedures for financial aid is included with all admission forms for prospective students and is made available to current students in January of each year.

The Office of Scholarships and Financial Aid assists students in working out programs to cover college costs. Those who apply for need-based financial aid receive an award letter indicating the aid for which they are eligible including grants, scholarships, loans, and income from student employment. Students should determine before registration how they will meet their costs and, if intending to carrying a full academic load, should plan to work no more than twelve to fifteen hours per week.

Specific information about financial aid programs is given in the following pages and is divided into three sections: (1) Denominational Grants, (2) academic scholarships, and (3) need-based aid. The scholarships and need-based programs and their conditions are described in the following sections. Questions or requests for additional information should be directed to the Office of Scholarships and

Financial Aid at the address or telephone number given inside the front cover of this catalog.

Academic Progress Requirements. Students who wish to receive financial aid must be meeting the normal standards for continuation as a student and must have completed the minimum credit units needed for good standing. These are described on page 24. These standards apply to Michigan Competitive Scholarships, Tuition Grants, and Differential Grants, to Calvin Scholarships, Grants, and Loans, to Pell Grants, Supplemental Educational Opportunity Grants, National Direct and Guaranteed Student Loans, Parent Loans for Undergraduate Students, and College Work-Study employment.

DENOMINATIONAL GRANTS

Students whose families are members of the Christian Reformed Church and who thus contribute regularly to Calvin College through denominational quotas receive a Denominational Grant. The amount of this grant is determined in part by the distance between the student's home and the college as measured in a direct line. For purposes of this grant, the home of an unmarried student is considered to be that of his parents; that of a married student to be his residence before enrolling at Calvin. However, out-of-state students who meet the residency requirements of the Michigan Competitive Scholarship, Tuition Grant, or Differential Grant Program must also be considered Michigan residents for purposes of the Denominational Grant. If a student's parents are not members of the denomination, the grant is based on the location of the Christian Reformed Church of which the student is a member. When the need of a student is met by a State of Michigan Competitive Scholarship or Tuition Grant, the Denominational Grant is reduced to keep the total amount of aid within the maximum permitted by state regulations.

The Denominational Grants for 1985-86 are:

	Grant per semester, if paying full tuition	Grant per course, if paying by course
For Michigan students		
Within 10 miles of the campus	\$180	\$40
From 10 to 150 miles	230	50
Beyond 150 miles	290	60
For out-of-state students		
Within 300 miles	390	80
From 300 to 1,000 miles	440	90
More than 1,000 miles	490	100
Manitoba, Ontario, Quebec	440	90
Alberta, British Columbia, Nova Scotia, Prince Edward Island, Saskatchewan	490	90

ACADEMIC SCHOLARSHIPS

Scholarships are awarded to incoming students to encourage good students who are likely to do superior work to enroll at Calvin and to upperclassmen to

encourage superior academic performance. Most scholarships are granted on the basis of the student's academic record and potential, but in some cases other factors such as program of study, financial need, and other designated criteria are taken into consideration. More than 250 scholarships are awarded annually to freshmen and more than 350 to upperclassmen. Students eligible for more than one scholarship are granted the largest scholarship for which they qualify.

Scholarships for Freshmen. Most scholarships for freshmen in 1985-1986 range from \$450-\$2,000. All freshmen are considered for scholarships at the time of admission—no separate scholarship application is required. Scholarship review begins in December, and students who are selected to receive a scholarship are notified soon afterwards. Students who wish to be considered for a Calvin National Merit Scholarship, a Presidential Scholarship, a Faculty Honors Scholarship, or one of the named scholarships must be admitted by February 1, and must arrange to have their ACT or SAT scores reported to the college by that date. The following scholarships are available to freshmen.

General Scholarships

Calvin National Merit Scholarships. Each year Calvin sponsors up to twelve scholarships for freshmen who are National Merit finalists. These scholarships provide a minimum award of \$1,600 per year and are renewable for up to four years of undergraduate study. Additional amounts, up to a total of \$2,000 per year, are available based on need. The scholarships also provide an allowance of \$50 for books other than textbooks for the freshman year. Prospective students who indicate to the National Merit Corporation that Calvin College is their first choice institution are considered for this award.

Presidential Scholarships. Scholarships of \$1,500 each (\$1,600 in 1985-86) are awarded to the top forty or fifty incoming freshmen who are not selected to receive a Calvin National Merit Scholarship. Selection is based on high school grades, class rank, and ACT or SAT scores. These scholarships also provide an allowance of \$50 for books other than textbooks.

Faculty Honors Scholarships. Approximately ninety or one hundred scholarships are awarded each year to students who demonstrate outstanding academic achievement and potential but are not selected to receive a Presidential Scholarship. Students who are valedictorians of their high school class receive this scholarship automatically, if they have a grade point average of 3.5 or

higher. National Merit Semifinalists receive this scholarship automatically if they are not selected for a Calvin National Merit Scholarship. Others are selected on the basis of high school grades, class rank, and ACT or SAT scores. The scholarship amount is \$900 for 1985-86 and \$1,000 for 1986-87.

Honors Scholarships. Scholarships of \$450 (\$500 for 1986-87) are awarded to students in approximately the top 25 percent of the incoming freshman class who are not selected to receive one of the above scholarships or one of the named scholarships described below. These scholarships are also based on an evaluation of high school grades, class rank, and ACT or SAT scores. Normally, a grade point average of 3.5 or better is required for consideration.

Named Scholarships

Calvin College Minority Grant. Gifts have been received from constituents and friends of the college to fund this grant program for students who are members of a minority culture in North America. To be eligible for a grant from this fund, candidates must have a grade point average of 2.5 or higher and must demonstrate financial need. Candidates for renewal are given the first consideration. One grant of \$1,000 was awarded to a freshman for 1985-86.

Emerson Minority Grant. Each year Calvin College receives a gift of \$2,000 from Mr. and Mrs. James Emerson to be used for grants to North American students of minority cultures. Two grants of \$1,000 each are awarded yearly on the basis of the student's academic record and financial need, with preference given to students from single parent families. Returning students are considered as well as incoming freshmen. A minimum grade point average of 2.5 is required for consideration.

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 or more scholarships are available each year to prospective freshmen from the Whitinsville, MA area. The scholarships range from \$300 to \$600 with selection based on the student's academic record, ACT or SAT scores, and, in some cases, on financial need. The \$600 scholarships are renewable for up to four years. Selection is made by the Scholarships and Aids Committee of the college in consultation with a representative committee from the Whitinsville area.

Amos Nordman Scholarships. Funds have been received from the Amos Nordman Foundation Charitable Trust to be used for scholarships to students at Calvin College. Mr. Nordman was a resident of Marne, Michigan, and established a foundation that makes contributions to several colleges in Michigan for student aid. The scholarships are awarded to students who have a cumulative grade point average of 3.0 or better and are from families with limited income and assets. Two scholarships of \$500 each were awarded for 1985-86.

The Plant Engineering Scholarship. The Grand Valley Chapter of the American Institute of Plant Engineers makes scholarships available to encourage good students, especially good minority students (including women), to consider engineering as a career. \$1,500 is available each year at least one half of which is awarded to one or more minority students. If the funds are not all used for minority students, other engineering students are considered.

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 North American students of minority cultures who

are related to the Christian Reformed Church. Selection criteria include the student's academic record, financial need, and interest in serving God's Kingdom through the Christian Reformed Church. Returning students are considered as well as incoming freshmen.

Spectrum Colors, Inc. Each year Spectrum Colors, Inc. of Kalamazoo, Michigan, provides the college with \$3,000 to be used for scholarships. Scholarships are awarded, first of all to children of employees of Spectrum Colors, Inc., and secondly to other graduates of Kalamazoo Christian High School. Selection is made by the Scholarships and Aids Committee of the college from a list of nominees provided by the corporation.

Steelcase Foundation Scholarships. The Steelcase Foundation of Grand Rapids, Michigan offers scholarships totalling \$4,000 annually to applicants who are children of Steelcase employees. Typically scholarships of \$500 each are awarded to two freshmen and six upperclassmen. The recipients are selected by the Scholarships and Aids Committee of the college. Applicants are judged on the basis of scholastic ability, character, and need. If scholarships are not filled by children of Steelcase employees, for whatever reason, the scholarships are available to other Michigan residents. To be considered, eligible freshmen must write a letter of application to the Office of Scholarships and Financial Aid.

The Edward D. Vander Brug Memorial Scholarship. Up to four scholarships are awarded annually from a fund set up by the Vander Brug family of Detroit, Michigan, in memory of Edward D. Vander Brug. The program is designed to recognize academically capable North American students of minority cultures who have demonstrated potential for leadership in high school or in college or in previous experience. The recipient must intend to pursue an education leading to full time service in agencies or institutions related to the Christian Reformed Church. Awards are in the amount of \$2,000 a year and are renewable, if the student's cumulative grade point average is 3.0 or higher, or if the grade point average for the previous year is 3.5 or higher. Need is not a requirement for the scholarship. Returning students are considered as well as incoming freshmen.

Woodlawn Christian Reformed Church Minority Scholarship. Each year the Woodlawn Christian Reformed Church of Grand Rapids, Michigan, provides the college with up to \$2,700 to be awarded to a North American student of a minority culture who is personally committed to Jesus Christ and His Church. The amount of the scholarship, which can range from \$1,000 to \$2,700, depends on the amount of the student's need and the availability of other aid. A minimum grade point average of 2.5 is required. Returning students are considered as well as incoming freshmen.

Music Awards

Oratorio Society Applied Music Scholarships. A number of awards of \$500 each are presented by the Calvin College Oratorio Society to prospective freshmen for use toward the cost of individual lessons in applied music. These awards are given to instrumentalists and vocalists who have records of superior achievement in high school music activities, who give evidence of outstanding talent and musicianship in audition, and who will participate in the scheduled rehearsals and performances of at least one of the following: band, capella, campus choir, orchestra. The deadline for applying for the Oratorio Society and Vander Heide awards is April 10. Application

blanks and additional information are available from the Music Department. Awards are announced by the end of April.

Vander Heide Voice Scholarship. An award of \$500 is offered annually by Mr. and Mrs. Jan Vander Heide to a vocalist 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 incoming freshmen are eligible. Applicants will be judged on the basis of evidence of talent and musicianship. See Oratorio Scholarship above for application procedure.

Freshman Keyboard Scholarship. Two awards of \$500 are offered annually by an anonymous donor to keyboardists who have a record of superior achievement in high school music activities. The award is applied to four semesters of private piano or organ lessons. The recipients will be expected to participate in the scheduled rehearsals and performances of at least one faculty-directed ensemble or fulfill this requirement by accompanying student lessons and performances. Applicants will be judged on the evidence of talent and musicianship. See Oratorio Scholarship above for application procedure.

Scholarships for Transfer Students

Honors and Faculty Honors scholarships, similar to those for freshmen, are awarded to transfer students based on their academic record at their previous college or colleges. Consideration for scholarships is given at the time of admission. A separate scholarship application form is not required. Students must be admitted by March 1 to receive maximum consideration. The criteria used are given below.

Faculty Honors Scholarship. Scholarships of \$900 are awarded to transfer students who have a grade point average of 3.65 or higher in their previous college work. The amount of the scholarship will be increased to \$1,000 for 1986-87.

Honors Scholarship. Scholarships of \$450 (\$500 for 1986-87) are awarded to transfer students who have a grade point average between 3.50 and 3.64 in their previous college work.

Scholarships for Sophomores, Juniors, and Seniors

A variety of scholarships are available for upperclassmen. This includes many named scholarships funded by donors as well as Honors, Faculty Honors, and Presidential Scholarships funded by the college. Honors Scholarships and Faculty Honors Scholarships are awarded automatically to those who have the required grade point average as described below. Students who have less than a 3.50 grade

point average and want to be considered for a scholarship and those who have a 3.50 grade point average or higher and want to be considered for a better scholarship must complete a scholarship application form. These are available from the Office of Scholarships and Financial Aid and must be filed by March 1. Students who are eligible for more than one scholarship are granted the largest scholarship for which they qualify. The following scholarships are available.

General Scholarships

Presidential Scholarships. Scholarships of \$1,150 each are awarded to approximately 15 or 20 top students at each class level. Selection is based on a review of the student's academic record at Calvin and the recommendations received from faculty members. A grade point average of 3.80 or higher is required for consideration. The amount of the scholarship will be increased to \$1,600 for 1986-87.

Faculty Honors Scholarships. Scholarships of \$900 are awarded to all students who have a cumulative grade point average of 3.75 or higher at the end of first semester if they are not selected to receive a Presidential or larger scholarship. The amount of the scholarship will be increased to \$1,000 for 1986-1987.

Honors Scholarships. Scholarships of \$450 (\$500 for 1986-87) are awarded to all students who have a cumulative grade point average between 3.50 and 3.74 if they are not selected to receive another larger scholarship awarded by the college.

Named Scholarships

Clarence and Anne Beets Scholarship. Dr. William Clarence and Mrs. Anne Beets have contributed a gift to Calvin College, the income from which is used to provide scholarships to students. Dr. and Mrs. Beets are interested in helping students who have been successful at Calvin and have the potential and motivation to continue to be successful but lack the financial resources to meet all of their expenses. For 1986-87, two scholarships of \$1,000 each will be awarded to students entering their junior or senior year. To be considered for a scholarship a student must demonstrate financial need, be making normal progress toward a degree, and have a cumulative grade point average of 2.5 or higher.

Bere Memorial Scholarship. The college has received a gift from Mrs. Jeanne L. Bere

in memory of her late husband, Paul Bere, the income from which is used to award one scholarship of \$600 or more each year. The scholarship is awarded to a pre-law student entering the junior or senior year, with primary emphasis on an evaluation of academic performance and potential need is a secondary factor in the selection.

Dr. John W. Brink Memorial Scholarship. One scholarship of \$500 or more is awarded each year in memory of Dr. John W. Brink to a premedical student for use in the junior or senior year at Calvin College. Selection shall be on the basis of character, academic performance, and potential without regard to need.

The Margaret and Douglas Bush Family Scholarship. The Bush family has provided the college with funds to encourage worthy students to prepare for positions in business and business education. Two or more scholarships of \$500 or more are awarded each year by the Scholarship Committee of the college on the basis of diligence, character, commitment to service of the Lord and mankind, promise of growth, and, in some cases, financial need. Four scholarships ranging from \$500 to \$1,100 were awarded for 1985-86. Although the student's academic record is not a primary factor, a grade point average of 3.0 or better is required.

Calvin Alumni Association Scholarships. The Calvin Alumni Association awards at least six scholarships of \$1,200 each to students who demonstrate a strong commitment to Christ, actively serve their neighbor while maintaining an excellent academic record, look positively (and realistically) on their education at Calvin, and can clearly articulate their life goals. Candidates for these scholarships are selected by the Scholarships and Aids Committee from among the applicants. They are then interviewed by members of the Alumni Association Board who make the final determination.

Calvin College Minority Grant. Gifts have been received from constituents and friends of the college to fund this grant program for students who are members of a minority culture in North America. To be eligible for a grant from this fund, candidates must have a grade point average of 2.5 or higher and must demonstrate financial need. Candidates for renewal are given first consideration. One grant of \$1,000 was awarded to a freshman for 1985-86.

Peter and Margaret (Bell) De Haan Chemistry Award. Mrs. De Haan has established a scholarship fund for the benefit of students in chemistry in memory of her late husband, Peter. Awards of \$500 or more each are based on Christian character, personality, possible financial need, and promise of growth. Selection is made by the Scholarship Committee.

DeKryger-Monsman Memorial Prize. As a result of a gift to Calvin College by Mrs. Gerald Monsman in memory of her husband, one prize of \$500 is awarded each year to a junior political science major for use in the senior year at Calvin College. The award is given primarily for academic achievement although other factors such as financial need may be taken into account. Selection of recipients is made by the Political Science Department in conjunction with the Scholarships and Aids Committee.

Paul and Mrs. Doris Dirkse Health Care Scholarship. Dr. and Mrs. Dirkse have provided the college with a fund, the income from which is used to award scholarships to students pursuing pre-professional courses in medicine, dentistry, nursing, physical therapy, and related professions and para-professions. Five scholarships ranging from \$900 to \$1,200 were awarded for 1985-86. Selection criteria include vocational interest, academic record, character, and need.

Bryan Dykstra Nursing Scholarship. The family of and friends of the late Bryan Dykstra from Rochester, New York have contributed funds to be used for scholarships in Bryan's memory. Bryan was a student at Calvin in 1982-1983 before he contracted leukemia and passed away in the fall of 1983. One scholarship of \$600 will be awarded each year to a student who is pursuing nursing as a career, in recognition of all that Christian nurses did for Bryan before his death.

Emerson Minority Grant. Each year Calvin College receives a gift of \$2,000 from Mr.

and Mrs. James Emerson to be used for grants to North American students of minority cultures. Two grants of \$1,000 each are awarded yearly on the basis of the student's academic record and financial need, with preference given to students from single parent families. Returning students are considered as well as incoming freshmen. A minimum grade point average of 2.5 is required for consideration.

Farmers Insurance Group Scholarship. Each year the Farmers Insurance Group of Los Angeles California, provides the college with a gift of \$1,200. This is to be used to award one or two scholarships to second, third, or fourth year students in mathematics or business administration. Financial need is a primary factor in selecting a recipient; however, an academic record of C+ or better is also required.

Grand Rapids Foundation Scholarships. As a result of a bequest by the late Stephen D. Lankester to the Grand Rapids Foundation, eight scholarships of \$500 each are available each year to juniors and seniors from Kent County. The primary purpose of this program is to provide assistance to students with good academic records (B or better) who have financial need. Recipients of this scholarship who wish to be considered for renewal must reapply each year.

Dr. Roger A. and Bradley J. Hoekstra Memorial Scholarship. A gift designated to provide student scholarships has been received from Mrs. Janice Hoekstra in memory of her late husband Roger and son Bradley. Two scholarships of \$750 or more will be awarded to upperclassmen who plan to pursue the study of medicine. Selection is based primarily on the student's academic record and potential, although financial need will also be taken into consideration.

Kent Medical Foundation Grants. Each year Calvin College receives funds from the Kent Medical Foundation to be used for scholarships for students in nursing. Recipients of these awards must be residents of Kent County or bordering counties and enrolled or planning to enroll in the Bachelor of Science Nursing Program. Selection is made on the basis of the student's academic record, potential for service as a nurse, and financial need. Two grants of \$650 each were awarded for 1985-86.

Dr. Harry Kok Memorial Scholarship. A top scholarship is presented each year, in memory of Dr. Harry Kok, to a junior stu-

dent for use in the 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. The amount of the scholarship for 1986-87 will be \$1,600 or more.

Amos Nordman Scholarships. Funds have been received from the Amos Nordman Foundation Charitable Trust to be used for scholarships to students at Calvin College. Mr. Nordman was a resident of Marne, Michigan, and established a foundation that makes contributions to several colleges in Michigan for student aid. The scholarships are awarded to students who have a cumulative grade point average of 3.0 or better and are from families with limited income and assets. Two scholarships of \$500 each were awarded for 1985-86.

The Plant Engineering Scholarship. The Grand Valley Chapter of the American Institute of Plant Engineers makes scholarships available to encourage good students, especially good minority students (including women), to consider engineering as a career. \$1,500 is available each year at least one half of which is awarded to one or more minority students. If the funds are not all used for minority students, other engineering students are considered.

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 North American students of minority cultures who are related to the Christian Reformed Church. The purpose of the program is to encourage the development of multi-racial leadership in the Christian Reformed Church. Selection criteria include the student's academic record, financial need, and interest in serving God's Kingdom through the Christian Reformed Church. Incoming freshmen are considered as well as returning students.

Spalink Memorial Missions Scholarship. The Spalink family has established a scholarship fund in memory of John Spalink, Jr., which provides one scholarship of \$500 each year. Its purpose is to encourage superior students to enter missions. The scholarship is awarded to a 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.

Steelcase Foundation Scholarships. The Steelcase Foundation of Grand Rapids, Michigan, offers scholarships totalling \$4,000 to applicants who are children of Steelcase employees. Typically scholarships of \$500 each are awarded to two freshmen and six upperclassmen each year. The recipients are selected by the Scholarship Committee of the college, and the applicants are judged on the basis of scholastic ability, character, and need. If scholarships are not filled by children of Steelcase employees, for whatever reason, the scholarships are available to other Michigan residents.

Edward C. and Hazel L. Stephenson Foundation Scholarship. Each year Calvin receives a gift of \$3,500 from this foundation to be used for scholarships. For 1985-86, five scholarships were awarded in amounts of \$700 each.

Earl Strikwerda Memorial Scholarship. Memorial contributions from the relatives and friends of Professor Earl Strikwerda have enabled the History Department to honor the memory of their former colleague with an annual scholarship of \$500. Junior year history majors should submit applications to the Chairman of the Department of History by March 1.

The Vander Ark Family Scholarship. The Vander Ark family, known as the teaching family, has funded a scholarship which is available to students at Calvin who exhibit a strong commitment to Christian service, scholastic ability, diligent study habits, sound moral character, and promise of growth in spiritual and moral leadership. In some cases, financial need may be considered as well. For 1986-87 it is expected that one scholarship will be available in the amount of \$500 or more.

The Edward D. Vander Brug Memorial Scholarship. Up to four scholarships are awarded annually from a fund set up by the Vander Brug family of Detroit, Michigan, in memory of Edward D. Vander Brug. The program is designed to recognize academically capable North American students of minority cultures who have demonstrated potential for leadership in high school or in college or in previous experience. The recipient must intend to pursue an education leading to full time service in agencies or institutions related to the Christian Re-

formed Church. Awards are in the amount of \$2,000 a year and are renewable, if the student's cumulative grade point average is 3.0 or higher, or if the grade point average for the previous year is 3.5 or higher. Need is not a requirement for the scholarship. Returning students are considered as well as incoming freshmen.

Ralph Gelmer Vander Laan Memorial Scholarship. Mr. and Mrs. Joseph W. Vander Laan, in honor of Mr. Vander Laan's brother, have provided the college with a fund, the income from which is used to award scholarships. One of the scholarships is awarded to a prospective junior or senior who is pursuing a program in the health professions, with preference given to those interested in missions or some other type of Christian service. The other scholarships are awarded to a top student in any area. For 1985-86, seven scholarships of \$1,200 each and one scholarship of \$1,000 were awarded. Selection criteria include the student's academic record, character, and need.

Randall K. Vander Weele Memorial Scholarship. Randall Vander Weele was killed in an accident shortly after his graduation from Calvin College in 1981. His family and friends have established a scholarship fund for the benefit of senior students pursuing a business or accounting program at Calvin. Normally, two scholarships of approximately \$1,000 will be awarded each year. Criteria include academic excellence and a commitment to pursue a career which will provide scope for the exercise of Christian leadership in business. The Department of Economics and Business administers this award. Address application to the chairman by March 1.

Dr. Robert Van Dyken Memorial Scholarship. A scholarship fund has been established in memory of Dr. Van Dyken, a 1941 graduate of Calvin College, who died March 13, 1983. During his lifetime, Dr. Van Dyken was employed as a chemist at a number of scientific laboratories and from 1961 until his retirement in 1974, he served as Assitant Director for Chemistry Programs for the Division of Research of the United States Atomic Energy Commission. One scholarship of \$600 was awarded in 1985-86 to a prospective junior or senior majoring in chemistry. The scholarship will be awarded primarily on the basis of the student's aca-

demical record with financial need as a secondary consideration.

George J. Van Wesep Scholarship. Each year Mr. & Mrs. Richard De Vos of Ada, Michigan, provide Calvin with a gift of \$5,000 to be used for scholarships. The gift is given in recognition of Mrs. De Vos' father, Mr. George J. Van Wesep, who was a teacher/administrator in the public and Christian schools for more than fifty years. Because of Mr. Van Wesep's commitment to education, and to Christian education in particular, the scholarships are awarded to students planning to pursue education as a career. Scholarships are awarded to juniors and seniors primarily on the basis of the student's academic record and potential for Christian service in education. Financial need is considered as a secondary factor. For 1985-86, five scholarships were awarded of \$1,000 each.

Vision 74, Inc. Scholarship. Vision 74, Inc., a non-profit organization in Canada interested in helping people in need, provides Calvin with money for scholarships. Candidates for these awards must be students from Canada who are pursuing a program that will lead to a vocation in human service's. Other selection criteria include the student's academic record and financial need. One scholarship of \$1,000 in Canadian funds was awarded for 1985-86.

Charles and Anna Wabeke Memorial Scholarship. Calvin has received a gift from Mrs. Ruth Heerspink, daughter of Mr. and Mrs. Wabeke, which has been used to establish a scholarship fund. Scholarships are awarded to upperclassmen who are planning to enter full-time Kingdom service with preference given to those interested in missions. The student's academic record and faculty recommendations are primary factors in the selection (a grade point average of 3.0 or better is required) although financial need is considered as well. For 1985-86, one scholarship of \$500 was awarded.

Woodlawn Christian Reformed Church Minority Scholarship. Each year the Woodlawn Christian Reformed Church of Grand Rapids, Michigan, provides the college with up to \$2,700 to be awarded to a North American student of a minority culture who is personally committed to Jesus Christ and His Church. The amount of the scholarship which can range from \$1,000 to \$2,700, depends on the amount of the student's need

and the availability of other aid. A minimum grade point average of 2.50 is required. Incoming freshmen are considered as well as returning students.

Ruth Zylstra Memorial Scholarship. Each year Calvin College awards one scholarship of \$300 to a student in a nursing program who is entering the sophomore, junior, or senior year at Calvin. Selection is made by the Scholarship Committee on the basis of the student's academic record, potential, character, and financial need.

Music Awards

Students receiving other Calvin-awarded scholarships in addition to one of these music awards must use the music award toward the cost of individual lessons and/or applied music at Calvin.

Alumni Players Upperclassman Music Award. The Alumni Players of Calvin College have provided the Department of Music with funds to make an annual award of \$500 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.

The Cayvan Award in Strings. An annual award of \$500 by Mrs. Leo Cayvan is offered to an outstanding sophomore or junior player of violin, viola, cello, or bass viol for use during the junior or senior year. This award is in memory of her late husband, Mr. Leo L. Cayvan, a great benefactor of the Music Department. Selection shall be made on the basis of proficiency in performance on the instrument, evidence of sound musicianship, grade point average, especially in music, and participation in the college orchestra and in a chamber music ensemble.

Helene Hekman Gezon Voice Award. Contributions have been received by the department in memory of Mrs. Gezon, a prominent contralto soloist with The Calvin

College Oratorio Society. Interest from this fund provides an annual award of \$500 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.

The Holtvluwer Music Award.

Contributions have been received by the department in memory of Henry Holtvluwer, first chairman of the board of The Calvin College Oratorio Society. Interest from this fund provides an annual award of \$500 to an outstanding sophomore student who is pursuing a major in music, for use in the junior year. Applicants will be judged on the basis of overall grade point average at Calvin.

John Scripps Wind Award. An annual award of \$500 is given by John Scripps to an outstanding sophomore or junior performer on a wind instrument. Applicants will be judged by the following criteria: superior performance on a wind instrument as evidenced in recital and ensemble performances, participation in and contribution to instrumental ensembles at Calvin, initiative and leadership in wind chamber ensembles, and grade point average, especially in music.

The Seymour Swets Voice Award.

Contribution have been received by the department in memory of Seymour Swets, the founder of Calvin's Music Department. Interest from this fund provides an annual award of \$500 to an outstanding sophomore or junior voice student who is active in a faculty-directed vocal ensemble at Calvin, for use in the Junior or Senior year.

The Upperclassman Keyboard Award.

Contributions have been received by the department from two anonymous donors. Interest from this fund provides an annual award of \$500 to an outstanding sophomore or junior pianist or organist to be used during the junior or senior year. Applicants will be judged on the basis of proficiency in performance at the keyboard, evidence of sound overall musicianship, and grade point average, especially in music.

Scholarships for Graduate Students

Graduate students enrolled in the Master of Arts in Teaching or Master of Arts in Christian Studies programs are eligible for scholarships similar to the Presidential, Faculty Honors, and Honors Scholarships for undergraduates. Students

currently enrolled at Calvin who want to be considered for a scholarship for the following year are required to file a scholarship application form. New students in master's degree programs are considered on the basis of their academic record at the time of admission. No separate scholarship application is required. New students must be admitted by March 1 to receive maximum consideration.

NEED-BASED FINANCIAL AID

Significant need-based financial aid is available to students from the college, the denomination, the federal government, and the various state and provincial governments. There are opportunities for part-time employment off campus as well.

Applications for need-based aid must be filed each year. To be fair to all students, requests for aid must be supported by a financial statement which provides information about income, expenses, assets, and indebtedness. This statement is reviewed for the college by an independent agency using nationally standardized criteria to determine the degree of need. Information about the criteria used to determine eligibility for need-based aid is given in a brochure entitled, *Do You Qualify?: a guide for estimating your eligibility for financial aid at Calvin College*. This brochure is available from the Office of Scholarships and Financial Aid.

Freshman applications for financial aid should be filed by February 15 (April 1 for Canadians) and upperclassman applications should be filed by March 15 to receive maximum consideration. Later applications are considered if funds are available.

Michigan Competitive Scholarships and Tuition Grants. The State of Michigan provides awards of up to \$2,000 to Michigan residents attending eligible institutions in the state. Competitive scholarships are awarded on the basis of ACT scores and need and can be used in both public and private colleges in the state. Tuition grants are awarded solely on the basis of need and can be used only at private colleges. Competitive scholarships are available only to undergraduate students; tuition grants are available for graduate as well as undergraduate work.

Pell Grants. The Pell Grant Program, funded by the federal government for U.S. citizens and permanent residents of the U.S., is designed to provide grant assistance of up to \$2,100 per year to students whose parents' income is approximately \$25,000 or less. Since there are factors other than income considered in the evaluation, some with incomes above \$25,000 may qualify for the program, and others with lower incomes may not qualify. Only students in undergraduate programs are eligible.

Supplemental Educational Opportunity Grant. This program, funded by the federal government, provides funds to the college for needy students. These grants are awarded to students who qualify for need-based aid but are not eligible for or do not receive enough grant assistance in the Pell and State Grant programs. Recipients must be U.S. citizens or permanent residents of the U.S. and must be enrolled in an undergraduate program. The maximum grant is \$2,000 per year.

Calvin Alumni Association Grants. Grants funded by the Calvin Alumni Association are awarded to nearly one hundred incoming freshmen from the United States and Canada. The Alumni Association also provides grants for minority and international students. The grants are made primarily on the basis of financial need and ordinarily range from \$200 to \$500. In special circumstances the grant may range up to \$1,000.

Albert Postman Loan Program. The late Mr. Albert Postman of La Glace, Alberta, Canada, has established a loan fund to assist

Canadian students attending Christian colleges. The primary purpose of the fund is to assist students who are planning to enter full-time Christian service with the Christian Reformed Church or its related agencies. To the extent that funds are available, however, loans will also be made to other Canadian students who are in need of assistance.

Calvin College Grants. The college has established a program of grant assistance for students who have financial need but are not eligible for other grant programs or whose need cannot be met with other grant programs. The program is open to graduate as well as undergraduate students; the maximum grant for 1985-86 is \$3,450.

Interim Grants. The college provides need-based grants to students enrolled in off-campus interim courses when there is an additional cost involved. These funds are made available so that students who need an off-campus course for their academic program are not denied this opportunity because of a lack of financial resources. Criteria used in awarding the grants include an evaluation of the importance of the interim course to the student's academic program and the student's need as determined from a financial statement. The amount of the grant depends on the cost of the interim course and on the student's need. The maximum grant is approximately \$700.

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 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 and permanent residents, provides long term loans to students with financial need. There is no interest charge on the loan, and repayment can be deferred as long as the borrower is enrolled in college at least half-time. Repayment begins six months after the borrower ceases to be at least a half-time student, and the interest rate during repayment is 5 percent simple interest. The minimum repayment is \$90 every three months with a max-

imum repayment period of ten years for loans which require larger payments. Under certain conditions, repayment and interest can be deferred and, in some cases, all or part of the loan may be cancelled.

Guaranteed Student Loan Program. 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 \$2,500 per year. Repayment of the loan is deferred as long as the student is enrolled at least half-time and until six months after leaving school, during which time there is no interest charge. The repayment period can be as long as ten years, if needed, although a minimum payment of \$50 per month is usually required. Applications for these loans are available from local lending institutions.

Canada Student Loans. The Canadian government sponsors an interest-free loan program for Canadian citizens similar to the Guaranteed Student Loan Program described above, with a maximum loan of \$4,000 per year. Application forms are available from provincial Offices of Education.

OTHER 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. These awards to seniors are granted for the student's contribution to musical life on campus and academic achievement.

Beverluis Awards in Christian Philosophy of Education. Each year, from the income generated by a grant of money given by a retired Calvin College professor of education and his wife, two awards, one graduate and one undergraduate, of approximately \$250 each are offered to students submitting the best essays on Christian Philosophy of Education and Curriculum Decisions. Although open to all students, those majoring in the departments of Education, Philosophy, and Religion and Theology are especially urged to submit essays. A member of each of these departments will serve on the panel of judges. Information regarding the awards

can be obtained from the office of the Academic Dean.

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.

Ervina Boevé Scholarship for Theater Arts.

Through the generosity of former students and friends this scholarship honors Mrs. Ervina Boevé for her contribution to the theater and the college while serving as Director of Thespians. Each year a scholarship of \$150, to be applied toward tuition, will be awarded by the Department of Communication Arts and Sciences to a junior speech major with a theater arts concentration on the basis of academic record and proven ability and dedication in performance, production, or scholarly research in theater. Applicants for the scholarship must submit an application portfolio to the department by April 1.

The Dr. Peter D. Hoekstra Memorial Award.

Dr. Robert G. Andree and Mrs. Katherine Schuringa Andree have established a prize of \$2,000 to be awarded annually to an outstanding senior graduating with a major in history. The award is made in memory of the late Dr. Peter D. Hoekstra, a former professor of history at Calvin College. Selection is made by the faculty of the History Department on the basis of aca-

demical excellence. The recipient must have completed at least two years of undergraduate work at Calvin College.

The Dr. Roger A. and Bradley Hoekstra

"Toward Christian Excellence in Medicine" Award.

Roger A. Hoekstra, M.D., an alumnus and supporter of Calvin College, and his son, Bradley J., an outstanding sophomore premedical student at Calvin College, were tragically killed in an airplane accident in July, 1981. In their memory, the Hoekstra family has established a scholarship fund, a part of whose income is used for an annual award to the outstanding senior premedical student. The award consists of a cash gift and an appropriate commemorative plaque. The candidate for the award will be selected by a faculty committee from nominations made to it by the faculty. The candidate must be a graduating senior who has completed more than two years of undergraduate work at Calvin College and has been accepted into an accredited medical school. The award will be based on academic excellence, strength of Christian character, and potential for excellence and Christian service in the practice of medicine.

Harmon D. Hook Memorial Award in English.

An award of \$50 is offered each spring to an English major who has indicated a serious interest in English or American language and literature and whose work in the discipline gives evidence of personal enrichment and promise of future service. To be considered, a student should have demonstrated not only academic competence but also such qualities as an interest in humane letters and a Christian concern for cultural and spiritual growth through literature. The English Department selects the person to receive the award.

Monsma Communication Award.

Each year, Dr. and Mrs. John W. Monsma, Jr., offer an award of \$100 to a student majoring in communication arts and sciences. 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, character, and personality. The Department of Communication Arts and Sciences 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.

The Beets Calvinism Award. The late Dr. and Mrs. Henry Beets established a fund, the income from which is used to award a \$60 first prize and a \$40 second prize for the best research papers on annually specified themes in Calvinism studies, written by Calvin College students. The prize or prizes are awarded at the discretion of the Department of Religion and Theology.

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, critical, and creative writing among Calvin College students. The \$50 award is administered annually by the English Department.

O. K. Bouwsma Memorial Award in Philosophy. Through the generosity of the widow of Professor O. K. Bouwsma and other benefactors, an annual prize of \$100 will be awarded to one upperclass student for distinguished achievement in philosophy and promise of future contribution to Christian scholarship. The Philosophy Department selects the recipient on the basis of submitted papers.

The Rinck Memorial Award. A fund has been established by former students and friends as a memorial to William Rinck, professor of mathematics at Calvin College from 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 mathematics who has, in the opinion of the Department of Mathematics and Computer Science, done superior work in undergraduate mathematics.

Jewish Evangelization Award. Dr. and Mrs. William J. Yonker have established a fund, the income from which is used to offer two prizes for the best essays on a subject bearing on the evangelism of the Jews. First prize is \$100; second prize is \$75. The contest is open to all college students and is administered by the Department of Religion and Theology.

Henry Zylstra Memorial Award. In honor of the memory of Professor Henry Zylstra, an award of \$150 is offered each fall to a senior English major at Calvin who plans to continue studies in literature on the graduate level upon graduating from Calvin College. The award is intended primarily to help defray expenses incurred in applying to graduate schools. Application should be made to the chairman of the English Department by September 30 of the applicant's senior year. The recipient or recipients will be selected by the English Department on the basis of demonstrated academic ability, commitment to and promise of success in graduate work, and a concern for Christian liberal education.

The Wall Street Journal Award. Dow Jones and Company, Inc., sponsors this honorary award which is presented annually to the outstanding business student in the field of finance. A rigorous, comprehensive financial principles exam is administered by the Economics and Business Department each semester, and the award is presented annually to the student with the highest test score.

American Production and Inventory Control Society Award. A \$100 scholarship is awarded annually to a student who has exhibited academic excellence and has expressed a sincere interest in pursuing an education in the field of production and inventory control. The recipient is selected by the Department of Economics and Business.

National Association of Accountants (NAA) Outstanding Accounting Student Award. The local chapter of the NAA annually recognizes the top accounting student at Calvin College, based on a recommendation by the instructors in accounting. Ideally, the student should intend to pursue a career in accounting.

Calvin Alumni Chapter Scholarships. Several Alumni Association chapters offer scholarships, which are administered locally, to incoming Calvin freshmen. Candidates should consult the Calvin Alumni Office or a member of the local Alumni Association chapter for information.

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 need of the student. The student should consult with the registrar 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.

The Lauren Wondergem Memorial Scholarship. The Board of the Hearing and Speech Center of Grand Rapids presents, in memory of Lauren Wondergem, a Calvin graduate who served as the Center's Executive Vice-President from 1962-1982, an annual scholarship of \$250 to a student intending to enter the field of speech-language pathology or audiology. In addition to this requirement, the Department of

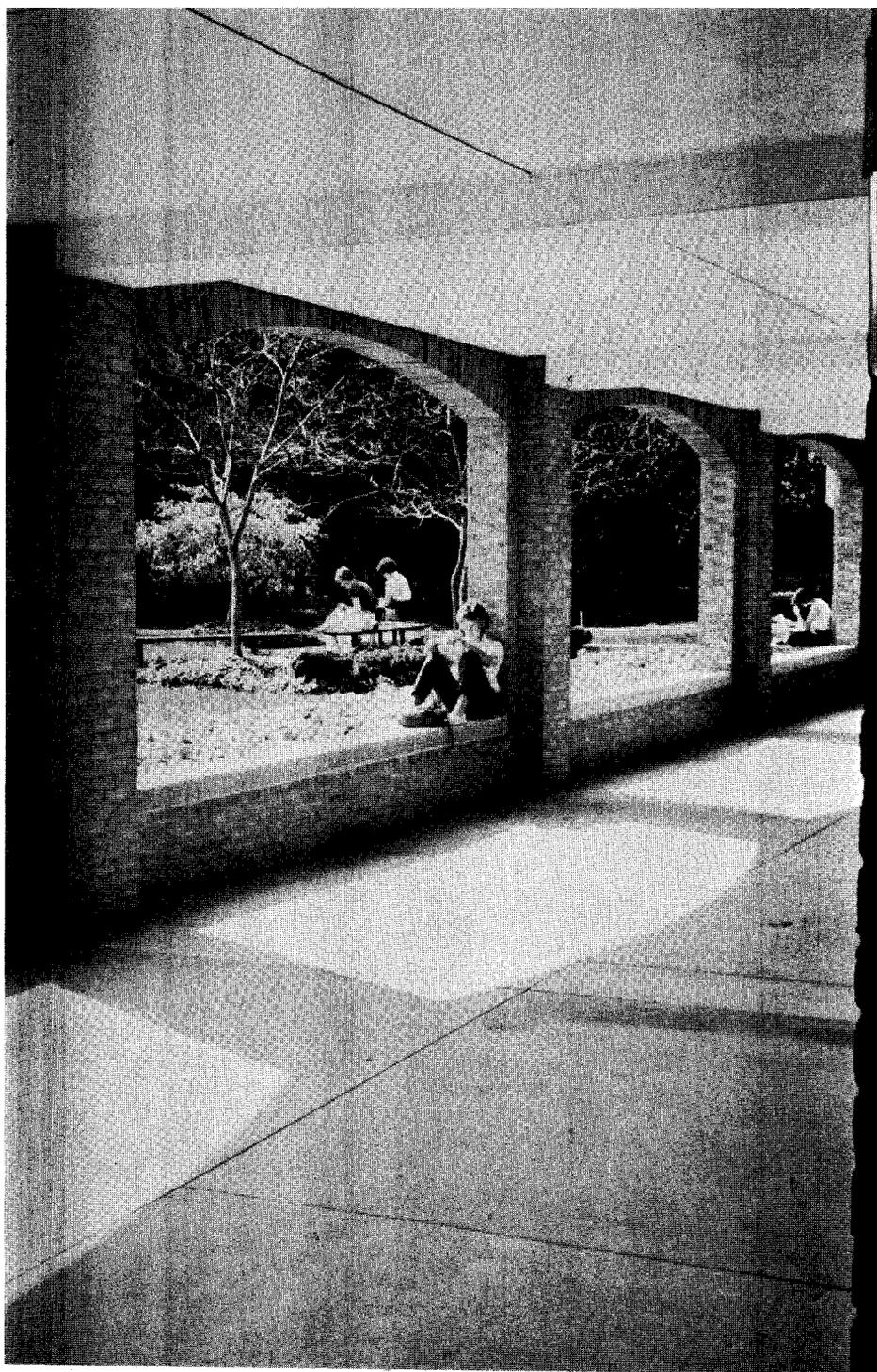
Communication Arts and Sciences will recommend a nominee to the Board on the basis of the student's academic record, character, and personality.

POST-GRADUATE FELLOWSHIPS

Board of Trustees Scholarship. Calvin Seminary, under the authority of the Board of Trustees of Calvin College and Seminary, offers a scholarship 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 of the Christian Reformed Church. The amount of the scholarship for 1986-87 will be \$1,600. Applications should be in the hands of the Scholarship Committee of the college by March 1.

Competitive National Graduate Fellowships. Mr. Charles Miller is the campus representative for Fulbright, Rhodes, Marshall, and similar fellowships.





UNDERGRADUATE PROGRAMS

Christian liberal arts education

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 student 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 a 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 this field of concentration, however, the student can achieve the same aims more fully, more intensively, in more detail.

The 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. Other degrees offered by the college include the Bachelor of Fine Arts in art, the Bachelor of Arts in Recreation, the Bachelor of Science in Nursing, the Bachelor of Science in Accountancy, the Bachelor of Science in Engineering, the Master of Arts in Teaching, the Master of Arts in Christian Studies, as well as a Bachelor of Science in Education in a combined curriculum plan with the Grand Rapids Baptist College. Cooperative bachelor of science degrees are offered with a number of other institutions in communication disorders, engineering, forestry, medical technology, natural science, and special education.

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 for four years 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, the designated liberal arts core, and an approved concentration, with a minimum average grade of C (2.0) both overall and in the program of concentration. Not more than one course unit of basic physical education or two units in applied music, drama, and speech may be applied to graduation requirements except when such courses are a designated part of a required major or minor program.

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

I. THE LIBERAL ARTS CORE

The liberal arts core is planned to provide a broad and significant educational foundation in a Christian setting. Strong high school preparation reduces the number of required courses in the core, and the number may be further reduced by examinations in any subject. Each student's high school record is evaluated at the time of admission, and he is informed at his first registration of the requirements which remain to be completed.

Six of the liberal arts courses provide the context for a Calvin education (history, philosophy, religion); 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 minimal command of a foreign language. These core courses are described in the various departmental sections. The specific requirements are as follows:

1. Six courses are required in history, philosophy, and religion

One course in history from 101 and 102.

One course in philosophy from 151, 153, 251, and 252.

One course in biblical studies from Religion 103, 108, 207, 208, 327, and 328.

One course in historical and theological studies from Religion 206, 301, 303, 304, 308, 311, and 312.

Two additional core courses from history, philosophy, religion, and Interdisciplinary W10 and 234, but not more than two of the required six may be in either history or philosophy or three in religion. Students in teacher education programs should take Philosophy 153 plus either Education 304 or Philosophy 209.

2. Three courses are required in mathematics and in the sciences

One course in mathematics from 100, 121, which is recommended in elementary teacher education programs, 131, and 161.

One course in physical science from Chemistry 110, Physics 110, 112, which is re-

quired in elementary education programs, Physics 123–124, Astronomy 110, 201, and Geology 103.

One course in biology from 111, 215, 216, 217, or 131, which is required in pre dental and premedical programs. A student may also meet this requirement by completing 107 or both 105 and 106.

The two requirements in the biological and physical sciences may also be met by a year's work in Biology 131–201 or 131–202, Chemistry 103–104, 113–114, Geology 105–152, 151–152, Physics 123–124 when accompanied by 181–182, 126–225, or 221–222.

Interdisciplinary 210, History of Science, will satisfy a semester's requirement in either physical or biological science for students who have completed one semester of college science.

Students who have completed, with minimum grades of C, four units of college preparatory mathematics in high school are excused from the mathematics requirement; those who have completed with minimum grades of C three units of natural science in grades 10 through 12 can fulfill the science requirement by taking one core course in any natural science. Every student must take at least one college course in natural science.

3. One course is required in economics or political science; one in psychology or sociology

One course in economics or political science from Economics 151, 221, Political Science 151, 201, 202, 203, and 210; Political Science 201 or 210 is recommended for elementary teacher education programs.

One course in psychology or sociology from Psychology 151, Sociology 151, 217, and Education 301, which is required for teacher education programs.

4. Three courses are required in literature and the other fine arts

One course in literature taught in English from courses numbered 200 through 321. English 325 and 326 do not meet this requirement.

One course in the other fine arts or in literature taught in a foreign language. These may be from Art 151, 231, 232, 332, 335, 338, 340, Classics 221, 231, Music 103, 133, 231, 232, 233, 234, 236, 238, 241, Communication 203, 217, 253, 304, 317, 318, 325, or foreign literature courses. Art 215 and Music 238 are acceptable only in elementary teacher education programs; Art 215 is required in special education programs.

A third course from either of these groups or English 325 or 326. Students who have completed, with minimum grades of C, four units of high school English (excluding speech) or those who have completed in grades 11 and 12 either one and one-half units of literature (excluding composition, creative writing, journalism, film, and mythology) or one unit of art history or music appreciation are excused from this requirement.

5. Competency is required in written rhetoric, spoken rhetoric, and physical education

A course in written rhetoric, English 100, or the passing of a competency examination.

A course in speech from Communication 100, 200, 240, or the passing of a competency examination. Communication 214 is acceptable only in elementary education programs.

A course unit in basic physical education from 102, 103, 104, or 105 with the additional credit from 110 through 198; 221 may substitute for one of the additional courses for students in teacher education and physical education. Not more than one course unit of basic physical education may be applied to graduation requirements.

6. Competency is required in one foreign language

Students must demonstrate a competency in a foreign language that is equivalent to two years' study in college or to four years' in high school with a minimum grade of C. Normally this is demonstrated by completing 123 or 202-level courses or by examination.

Students are advised to continue in languages they have studied previously and will be placed in classes at their level of ability as determined by placement examinations. Special three-course sequences (121-122-123), involving two semesters and an interim, are available in French, German, and Spanish for students whose preparation is weak. In no case, however, will students receive graduation credit for more than four courses from the 121-123 and 101-202 series. Languages other than those taught at Calvin may be accepted. Students for whom English is a second language are exempt from this requirement but are required to take English core courses each semester until they have completed two courses in English or American literature.

A student usually should complete the core requirements in mathematics, history, and written rhetoric by the end of the 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 the schedule for completing them should be worked out early with the appropriate academic adviser.

II. INTERIM COURSES

A student must complete a minimum of three regular interim courses, courses numbered with either a W or an I as a prefix, for graduation. (Transfer students must complete one interim course for each year in residence.) Interim courses are graded honors (H), satisfactory (S), or unsatisfactory (U), except those courses that satisfy core requirements, which are graded in the conventional A-F system. Students may not take more than two interim courses in a single department.

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, assistant to the provost.

III. PROGRAMS OF CONCENTRATION (MAJORS AND MINORS)

Majors. As stated above, every degree-seeking student must fulfill the requirements of a faculty-approved departmental or group major. Although such major concentrations are not normally chosen until the second semester of the sophomore year, most programs do presuppose the completion of specific freshman and sophomore courses. Official admission to a major program requires the formal approval of a department or program adviser and the completion of a counseling form which details the student's remaining academic requirements. If at any time a student changes his major, he must again submit a new counsel-

ing form for the new major. Teacher education group majors and some departmental majors for teachers may be applied only to teacher certification programs.

To be admitted to a department's major program a student must have earned a C (2.0) in each course designated as a prerequisite for admission, unless that department stipulates a C (2.0) average in two or more prerequisite courses. To be admitted to a group concentration a student must have met the grade point average required for admission by the primary department within that group. A student not maintaining a minimum grade of C (2.0) in the program of concentration may be permitted to remain in that program for a single semester of probation.

The various programs of concentration are specified in the section of the catalog which describes departmental programs and course offerings, beginning on page 85. Group majors designed for teacher certification programs are described in the section on Teacher Education Programs, on pages 53 and following. Students may also initiate interdisciplinary programs of concentration other than those formally approved by the faculty. Requirements for developing such interdisciplinary programs are available from the registrar's office. Such programs require the approval of the departmental chairmen concerned as well as of the registrar.

Minors and Supplementary Concentrations. Optional six-course departmental minors and supplementary group concentrations are possible in certain fields. A C (2.0) average is required for admission to such programs and for graduation in them. Most of the minors are described in the departmental sections of the catalog. The supplementary concentrations in church education are included under the Department of Religion and Theology; that in environmental studies under the Department of Geology, Geography, and Environmental Studies, that in journalism, under the Department of English; that in German studies, under the Department of German; and that in social work, under the Department of Sociology.

Special academic programs

Course Credit and Exemption Examinations

Students who know the material covered by any college course are encouraged to demonstrate their mastery by examination. This can be done in three ways.

First, at the time of admission, freshmen may satisfy this requirement by submitting a grade of 3 or higher on an Advanced Placement (AP) Examination conducted by the College Board.

Second, students may receive course credit by securing a satisfactory score on any of the Subject Examinations of the College-Level Examination Program (CLEP) of the College Board. These tests are usually administered during the third week of each month. The minimum score for credit is that which corresponds to the final course grade of C on the tables published by the College

Board. For instance, a minimum score of 47 is required in English composition, calculus, general chemistry, general psychology, western civilization, and American government. Scores on other subjects are higher or lower and, in foreign language, they determine the amount of credit that will be granted.

Third, regularly enrolled students may meet any core requirement by departmental examination and may, except when the department deems this inappropriate, receive regular academic credit for any course by examination. The student's performance on such tests will be recorded on the student's record, and the student will be charged a \$5 fee for an exemption examination and \$20 for a credit examination. Students wishing to take departmental examinations should apply at the Registrar's Office by October 1 if they wish to take the examinations during the fall semester and by February 15 for the second semester.

The Honors Programs

Calvin College offers two types of honors programs. 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 graduate with honors, students must apply to their major departments, must have a cumulative grade point average of 3.3 or higher, 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. Regular interim courses with honors grades are not considered honors courses. Before applying to the department the student must have completed at least two honors courses in any 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 may be graded on the basis of satisfactory or unsatisfactory.

The honors programs are under the supervision of Mr. Charles J. Miller, assistant to the provost.

The Academic Support Program

The Academic Support Program provides training and assistance to students who desire to improve upon their past academic performance or who have

encountered difficulties in their academic programs. It offers opportunity for development of college-level study and reasoning skills in a classroom setting, through personal academic counseling and from trained tutors.

Special intensive classes are offered in English rhetoric and English as a second language for students who need systematic review of language skills, and mathematics review courses are available to liberal arts students as well as science students who have limited preparation in mathematics. Course descriptions can be found on page 90.

Participation in the program is required of freshmen with conditional admission or probational standing, but its services are available to any student. Services available upon request include analysis of study efficiency, diagnostic testing, and development of individualized programs for improvement in reading, reasoning, spelling, specialized vocabulary, and mathematics.

The director of the program is Mrs. Evelyn Diephouse.

Self-instruction in Languages Not Otherwise Taught at Calvin

Students may earn credit for foreign languages not otherwise taught at Calvin through a supervised, self-instruction program. Such languages include Arabic, Chinese, Indonesian, Italian, Japanese, Portugese, Russian, Vietnamese, and may include others. This program is open to sophomores, juniors, and seniors with cumulative grade point averages of at least 3.0 who have had prior successful language study. Credit may be applied toward the foreign language graduation requirement only if fourth-semester proficiency is achieved. The director of this program for self-instruction in less commonly taught languages is Mr. James Lamse of the German Department.

The program requires ten to fourteen hours a week of independent study, using tape-recorded materials coordinated with a course text, and an additional minimum of three hours of private or small group tutorial drill sessions with a native speaker of the language. The student must commit himself to the schedule established by the program director and must complete the course within a specified period. Progress of the student is monitored by both the native speaker and the program director, with the final evaluation based on written and oral tests administered by an outside examiner.

Students interested in such instruction should apply to the director at least a month in advance for languages presently being offered or four months in advance for others.

Study-Abroad Programs

Students wishing to participate in any Calvin-sponsored off-campus program must be in good academic and social standing, must be meeting the requirements of the particular program, must be recommended by the Calvin adviser of the program, must be approved by the registrar, and, prior to the beginning of the program, must officially register for it at the Registrar's Office and have made financial arrangements to pay the appropriate fees at the Business Office.

Calvin's study in Spain program. During the second semester of each academic year, Calvin offers an introductory Spanish language program in Denia, Spain. Students live with Spanish families and earn credit for 101, 102, 201, and 202, satisfying the foreign language requirements for a degree. The cost of the program, including air travel to Spain, is approximately the same as for a semester in residence on campus. Enrollment is limited. Preference is given to sophomores and upperclassmen who are maintaining a cumulative average of at least 2.5, but freshmen with good records are considered. Students are advised to take Spanish W11 during the interim. The director of the program is Mrs. Elsa Cortina of the Department of Spanish.

Calvin's cooperative program with Central College in France, Germany and Austria, and Spain. In cooperation with Central College, Calvin College offers semester and year programs of study in France, Germany and Austria, and Spain which permit students to register for courses in a variety of subjects. Such courses may be applied toward graduation requirements at Calvin. To be eligible for such programs a student must have completed the study of the appropriate language through the second-year level. Students who need language review may take a month-long intensive course in the country of their program before the beginning of the fall semester. English language programs are available in Wales and England.

To be eligible for such programs, students must be maintaining a cumulative grade point average of 2.5, must have the recommendations of two faculty members, and must have determined how credits earned in the program can be applied to graduation requirements. Such programs are most appropriate for juniors and seniors and may involve financial aid through Calvin College. Students should apply through Mr. Charles J. Miller, assistant to the provost.

Spring semester in the Netherlands. This cooperative program with Dordt College is offered in Amsterdam and enables students to live with Dutch families for part of their stay and near the Free University of Amsterdam for the remainder. Courses are available in art, Dutch language and culture, history, and international marketing. Prerequisite to admission to the program is a semester of Dutch or its equivalent, sophomore status or higher, and a cumulative grade point average of at least 2.5. The program in 1986 begins on January 29 and ends on May 22. The director at Calvin is Mr. Martin Bakker.

Other Off-Campus Programs

Internship programs at the Chicago Metropolitan Center. The Chicago Metropolitan Study Center sponsored by Calvin, Central, Dordt, Hope, Northwestern, and Trinity Christian 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 history, economics, English, political science, psychology, and sociology. For details consult Mr. John Verwolf, Director of Placement.

AuSable Trails Institute of Environmental Studies. This Institute is designed to support and serve Calvin College and other evangelical Christian colleges in

environmental studies. The Institute offers courses and programs in field ecology, field biology, land resources, water resources, and environmental studies. In a setting of northern lower Michigan forests, wetlands, lakes and rivers, students take courses which provide academic content, field experience, and practical tools for stewardship of creational resources. Programs and courses are offered during the summer, interim, and regular semester. The academic credit is earned through the cooperating colleges and the Institute grants vocational certificates for environmental analysts, land and water resource analysts, and naturalists. Information about the programs and courses is available from Mr. Alan Gebben in the Biology Department.

The Oregon Extension Program. This cooperative program with Trinity College of Deerfield, Illinois, is conducted in Oregon during the fall semester. Students become part of a small, intellectual community where instruction is personal and tutorial and where the focus is on a Christian and multi-disciplinary study of contemporary life and thought. Students may select courses from biology, literature, history, philosophy, psychology, religion, and sociology but more than half of their work must be outside their primary field of interest. Details about the program and application forms are available from the registrar's office.

American Studies Program. Calvin College participates in the American Studies Program in Washington, D.C., which is sponsored by the Christian College Coalition. Based on the principle of integrating faith, learning, and living, students are invited to spend time in Washington, D.C., serving as interns in a variety of governmental and non-governmental agencies and participating in an academic seminar program. This "Washington campus" for the Coalition colleges is viewed as one way of challenging students to consider the meaning of proclaiming the Lordship of Jesus Christ in all areas of life, including career choices, public policy issues, and personal relationships.

Course descriptions for the American Studies Program are found under Interdisciplinary courses. Calvin prefers applicants who are in their junior or senior year, who have a grade point average of 3.0 or higher, and who show promise of benefitting from the internship and seminar experience. Further information and application forms may be obtained from Mr. Charles Strikwerda of the Political Science Department.

Programs for teacher education and other professions

Undergraduate Teacher Education Programs

Students wishing to become teachers must make formal application to the education department and be admitted to the program. Specified standards

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

must be maintained to remain in the program and be recommended for certification.

Before taking any courses in the department, students must apply for admission to the teacher education program at the Department of Education. To be eligible they must have completed at least nine course units with a minimum cumulative grade point average of C (2.0), must have completed at least twenty-five hours of supervised experience with school-aged people, must pass competency-tests in English, mathematics, and reading; and must complete a Secondary, Elementary, or Special Education Program Sheet and have this on file with the Registrar. Ordinarily students apply for admission at the end of their sophomore year, but those needing to complete 301-303 during the second semester of their sophomore year must apply during the previous semester. Those in the combined Calvin/Grand Valley special education program are required to have a C+ (2.3) cumulative grade point average.

To remain in the teacher education program a student must complete Education 301-303 (and 216, if in special education) with a minimum grade of C and receive the positive recommendation of the instructors. They must maintain an average of C (or C+, if in the Calvin/Grand Valley program), in their declared major, minor, education courses, and overall. Prior to admission to their directed teaching a student must also have completed twenty-five course units including at least six in his major and must have the approval of the major adviser and of the Department of Education. Students normally should apply for their directed teaching assignment by March 1 prior to the academic year in which they expect to student teach.

To be recommended for teacher certification, a student must have maintained the standards above, must have completed the degree requirements as listed on the counseling sheet, must have completed directed teaching with a minimum grade of C, and must be recommended by his or her college supervisor.

Transfer students, those entering teacher education tardily, and post-baccalaureate degree students must be admitted to the program if they seek teacher certification.

Students not meeting the conditions of the program are dropped automatically and are notified in writing. To seek readmission to the program a student must apply in writing to a committee consisting of the registrar, the chairman of the Teacher Education Committee, and the chairman of the Department of Education.

Canadian students can meet all or most of the teacher licensing requirements for any province while attending Calvin College. In addition to completing one of the four-year teacher education programs at Calvin such students must have met the standards required for admission to their provincial universities and must have completed nine courses in education. Because other provinces consider an Ontario Grade 13 certificate to be equivalent to their Grade 12 certificates, advanced credit given for work in Grade 13 is discounted by the ministries of education in the other provinces when evaluating teaching credentials.

Students from Ontario wishing to meet its requirements must complete four years of education (120 semester hours) beyond Grade 13 or five years beyond

Grade 12 (150 semester hours). One year of that preparation (30 semester hours) must be in professional education courses, including practice teaching. In addition, students completing their teacher education in another province or state must also earn the teacher credentials of that province or state. At Calvin some students, particularly those with Grade 12 preparation, earn both a bachelor's and a master's degree while completing the requirements.

The Ontario Christian Teacher Certificate requires that the teacher has met the requirements for provincial certification and has completed five course units (18 semester hours) in courses taught from a Christian perspective. All except a course in the history or philosophy of Canadian education or in Canadian school law can be completed at Calvin. In addition, such certification requires that the teacher has taught for two years in a Christian Schools International member school. For current information or any further clarification, consult Miss Madge Strikwerda, director of teacher certification.

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. The Master of Arts in Teaching program at Calvin can be used not only to satisfy the requirements for continuing certification but also to develop additional areas for certification. Graduates seeking such certification should consult the director of teacher certification.

Because the specific requirements for students in the Bachelor of Science in Education degree in the combined curriculum plan with the Grand Rapids Baptist College differ from those given below, such students should consult the *Student Program Guide Book* . . . developed for that program.

Elementary education. The minimum elementary education program requires the completion of the general education requirements (See pages 46-48 for the courses recommended for studies in teacher education); either an approved group concentration of ten and a half courses or a departmental concentration of at least 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 the professional education courses. Students interested in elementary education should secure copies of the *Student Program Guide Book* . . . from the Department of Education. Programs should be worked out with an elementary education adviser and have the written approval of the adviser in the area of concentration.

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

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 in the group, 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 Communication 214 are required. Students majoring in this group must also complete one of the following five-course departmental programs: English 100, 200, 325, and two others; or Communication 203, 214, 215, and two others. In addition students must complete the three designated courses from the 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 the language arts adviser, Mr. Henry Baron of the Department of English.

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, Geology 100 or 103. 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 or 210, 202 and two 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 Geology 100 or 103 and Geography 210 and 220. 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 the social studies adviser, Mr. Samuel Greydanus of the Department of History.

General Science Studies Group Major. The five required courses for any concentration in this group are: Biology 111, 131, 215, or 217; Chemistry 110, 113, or 103; Environmental Science 201 or 202; Geology 100, 103, 105, or 151; and Physics 112 or 113. In addition a student must complete one five-course and one three-course sequence listed below. The recommended five-course sequence in biology is 131 or 111; 201 or 217; 202 or 215; 216 or 430S; and one elective. In chemistry, 103–104 and three electives. In earth science, Geology 100; 105 or 151; Astronomy 110 or 201; Environmental Science 202; and one elective. In environmental science, 201, 202, and 395; Geology 100; and one course from Biology 216, Geology 103, Chemistry 103, 111, and 113. In geology, 103, 105, or 151; 152; 212; and two approved electives. In health science, Biology 105, 106, 107, and interim courses in health and nutrition. In physics, 123, 124, 181, 183, 225, 226, and one elective. In the physical sciences, Astronomy 110; Chemistry 103, 110, or 113; Geology 100, 103, 105, or 151; Physics 112; and one elective. The recommended three-course sequence in biology is made of any three courses listed for the five-course sequence. In chemistry, 103–104 or 113–114 and one elective. In environmental science, 201, 202, and Biology 216 or Geology 100. In geology, 103, 105, or 151; 152; and 212 or 311. In health sciences, Biology 107, 215, and an interim course in health or nutrition. In physics, 123, 124, 181, 182, and one elective; or 221, 222, and one elective. The adviser for these programs is Mr. Clarence Menninga of the Department of Geology.

Fine Arts Studies Major. Required are Art 215, Communication 214, and Music 238 or, if the student is completing a five-course sequence in music, Music 239 are required. Students majoring in this group must complete a five-course departmental sequence from: Art 205, 209, 215, 231, and 232; Music 103, 233, 234, 237, 339, and two semesters of 110, 120, 130, 140, 150, 160, 170, 131, 141, 161, or 171; or in drama, Communication 203, 214, 217, and two additional courses from 219, 304, 317, 318, or an approved interim course. In addition, a student must complete one of the following three-course sequences: Art 205, 215, 231 or 232; Music 133, 233 or 234, 238 or 339; Communication 203, 214, and 217. 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 the fine arts adviser, Mrs. Helen Bonzelaar of the Department of Art.

The appropriate education courses for students in elementary education are 301, 303, 304, 305, 322, 324, 325, 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 215, Biology 111, 215, 216, or 217, English 100 and any literature course in English or in a foreign language; Geography 101, Geology 100 or 103, History 101 or 102 and any other history course, Mathematics 100, 121, 131, or 161, Music 238 or 339, Physics 112, 113, Psychology 204, Political Science 151, 201, or 210, and Communication 214. Physical Education 221 is recommended as a substitute for a quarter course of basic physical education. A minor in the Academic Study of Religions is also possible. The adviser is Mr. Henry Hoeks of the Department of Religion and Theology.

Secondary education. The minimum secondary program requires the completion of the general graduation requirements (see pages 46–48 for the courses recommended for students in teacher education); a departmental concentration of at least eight and a half courses or a group concentration of at least ten and a half courses; a minor of six courses in another department or a group minor of seven; and seven professional education courses. Programs should be worked out with the appropriate departmental adviser and have the approval of Mr. LeRoy Stegink, director of teacher education.

The programs of concentration should be selected from the following subject areas: art, biology, chemistry, economics, English, French, German, history, Latin, mathematics, music, physical education, physics, political science, Spanish, and speech. Majors in art and music require ten and a half courses. The minor should be selected from these subject areas or from geography, psychology, religion and theology (the academic study of religions), and sociology.

Group concentration have particular advantages for middle or junior high school programs but must be planned with care to meet the North Central standards defined in the paragraph below in addition to the standards of Michigan. A major group concentration consists of ten and a half courses, at least 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, geography, geology, and physics), and the social sciences (economics, geography, history, and political science). Group minors of seven courses with the minimum of three in one subject may be chosen from the same areas.

The North Central Association has requirements that differ from state and college requirements. It 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, a course and a 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 course units 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, five of which may be in English.

The appropriate education courses for students in secondary programs are: 301, 303, 304, 307, 308, 346, and 356.

Special education. Calvin College offers a program in special education, which leads to teacher certification at the elementary or secondary level as well as to endorsement as a teacher of the mentally impaired. Students in the program must complete the liberal arts core, the professional education requirements for elementary education, a ten and a half course concentration in special education, and a six-course planned minor.

Calvin College also offers a Bachelor of Science in Special Education degree in cooperation with Grand Valley State Colleges. This program usually requires four years and two summers to complete. Admission is limited to students who wish to teach the hearing impaired, emotionally impaired, or the physically impaired. Students in cooperative programs with Grand Valley must complete a designated core of thirteen liberal arts courses, a group concentration in social studies, a six-course planned minor, six professional education courses, and the additional requirements for endorsement in special education. Additional costs include summer school tuition and, for those who are not Michigan residents, approximately \$800 additional tuition during the last semester of the program. Students interested in either the mentally impaired program or in the consortium programs with Grand Valley State Colleges should consult Mr. Thomas Hoeksema.

In addition, Calvin College offers a Master of Arts in Teaching degree in learning disabilities. Part of the program leads to certification as a teacher of the learning disabled. Applicants must possess an elementary or secondary teaching certificate and must have completed coursework in the education or psychology of exceptional children and in child or adolescent psychology. Two years of regular teaching experience are recommended. Students in this program complete two courses in the context of education, four and one-half courses in the learning disability concentration, two electives, and a project. Practicum experience is included. A non-degree endorsement program is also possible. Both programs satisfy the course requirement for continuing certification. Students interested in the master's degree program in learning disabilities should consult Miss Myra Kraker.

Bilingual education. Because bilingual teachers must be prepared to teach all subjects in both English and Spanish, Calvin's bilingual program requires the completion of a typical elementary education program with some modifications. A group major in language arts is appropriate and reduces the total number of courses required. Students should request a bilingual assignment in Education 303 and will do half of their directed teaching in a bilingual classroom. Furthermore, they must be prepared to demonstrate competency in reading, writing, speaking, and listening in both English and Spanish.

The additional course requirements for the seven-course program, which leads to an endorsement minor in bilingual education, are: Interdisciplinary 301, Introduction to Bilingual Education; English 329, Linguistics; Spanish 360, Spanish-English Linguistics; Spanish 373, Hispanic Culture in the United States; and either History 211, Survey of American History, if the student has little back-

ground in American history, or 356, Social and Cultural History of the United States.

The adviser for this program is Mrs. Ynés Byam of the Department of Spanish.

Post-Baccalaureate Non-Degree Teacher Education Programs

Post-Baccalaureate Non-Degree Program Leading to a Michigan Provisional Teacher Certificate. This program is for those who have graduated with a bachelor's degree from an accredited institution without having obtained a teacher certificate. All persons interested in certification will require an evaluation of their undergraduate programs for certification requirements.

Required professional courses in this program include Education 301, 303, Education 581 or Philosophy 501, and two to three course units of teaching internship or the equivalent. Prospective elementary teachers must complete Education 305, 322, and one of the following: Education 540, 541, 542, or 543. Prospective secondary teachers must complete Education 307-308 and 356. Certification requirements for teaching majors and minors must also be met.

Requests for admission to Calvin College should be addressed to the Office of Admissions (See the admission regulations on page 17 in this catalog). The application for undergraduate admission must be completed and designated Non-degree Teacher Education Program. In addition, students must apply for admission to the teacher education program at the Department of Education. To be eligible they must have a minimum cumulative grade point average of C (2.0), and must have completed at least twenty-five hours of supervised experience with school-aged people. Information regarding teacher certification should be obtained from the director of teacher certification, Miss Madge Strikwerda.

Information regarding majors and minors should be obtained from an appropriate departmental adviser, as follows:

ART, Mrs. Helen Bonzelaar, Department of Art

BILINGUAL EDUCATION, Mrs. Ynés Byam, Department of Spanish

BIOLOGY, Mr. Bernard Ten Broek, Department of Biology

CHEMISTRY, Mr. Kenneth Piers, Department of Chemistry

COMPUTER SCIENCE, Mr. Paul Boonstra, Department of Mathematics

ECONOMICS, Mr. Eugene Dykema, Department of Economics

ENGLISH (ELEMENTARY), Mr. Henry Baron, Department of English

ENGLISH (SECONDARY), Mr. William Vande Kopple, Department of English

FINE ARTS, Mrs. Helen Bonzelaar, Department of Art

FRENCH, Mrs. Barbara Carvill, Department of Germanic Languages

GERMAN, Mrs. Barbara Carvill, Department of Germanic Languages

GEOGRAPHY, Mr. Clarence Menninga, Department of Geology

HISTORY, Mr. Samuel Greydanus, Department of History

LANGUAGE ARTS, Mr. Henry Baron, Department of English

MATHEMATICS, Mr. Paul Boonstra, Department of Mathematics

MUSIC, Mr. Dale Topp, Department of Music

PHYSICAL EDUCATION, Mr. Marvin Zuidema, Department of Physical Education

PHYSICS, Mr. Paul Boonstra, Department of Mathematics

POLITICAL SCIENCE, Mr. Robert De Vries, Department of Political Science

PSYCHOLOGY, Mr. Roger Stouwie, Department of Psychology

RELIGION, ACADEMIC STUDY OF, Mr. Henry Hoeks, Department of Religion and Theology

SCIENCE STUDIES (ELEMENTARY), Mr. Clarence Menninga, Department of Geology

SCIENCE STUDIES (SECONDARY), Mr. Paul Boonstra, Department of Mathematics

SOCIAL STUDIES, Mr. Samuel Greydanus, Department of History

SOCIOLOGY, Mr. Don Smalligan, Department of Sociology

SPANISH, Mrs. Ynés Byam, Department of Spanish

SPECIAL EDUCATION, Mr. Thomas Hoeksema, Department of Education

SPEECH, Mr. David Holquist, Department of Communication Arts and Sciences

Post-Baccalaureate Non-Degree Program Leading to a Michigan Continuing Teacher Certificate. This program is for those who have a bachelor's degree and a provisional teacher certificate. It is intended for teachers who would like to take graduate courses but not enroll in a master's degree program. Courses taken under this program may be transferable to a master's degree program at a later time, if applicable to a particular concentration.

A minimum of eighteen (18) semester hours beyond initial certification is required for recommendation for a continuing teacher certificate. A few special endorsements may require more course work. If all course work is taken at Calvin, five Calvin course units fulfill this requirement. Courses in the major and minor(s) should be chosen in consultation with an appropriate departmental adviser at the time the program of study is initiated. Previous course work and planned selections must be evaluated by the director of teacher certification. Only courses in which a grade of C (2.00) or higher is received may be applied to the program. Students who graduated from and were recommended for their provisional teacher certificate by Calvin College must take at least two of the course units at Calvin. All others must take at least three of the course units at Calvin.

Requests for admission to Calvin College must be addressed to the Office of Admissions and designated Non-degree Program for Continuing Certification. Information regarding teacher certification should be obtained from the director of teacher certification, Miss Madge Strikwerda.

Post-Baccalaureate Non-Degree Special Education Program Leading to a Michigan Endorsement in Learning Disabilities. This program is for those who have a bachelor's degree and a teacher certificate and who wish to obtain an endorsement in learning disabilities.

This program includes education or psychology of exceptional children, introductory psychology, child or adolescent psychology, and one elective, all of which may be transferred from previous undergraduate or graduate work. In addition, the following courses must be taken at Calvin: Education 550 Theories of Learning Disabilities (1 unit), Education 551 Diagnosis and Prescription: Learning Disabilities (1 unit), Education 582 Curriculum and Instruction: Learning Disabilities (1 unit), Education 548 Directed Teaching: Learning Disabilities (1 ½ units).

Application to Calvin College and to this program should be made to the Dean for Academic Administration. The adviser for this program is Miss Myra Kraker.

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.

Accounting

Students may qualify themselves in accounting in two ways. They may complete a Bachelor of Arts degree with a business concentration, taking additional courses in accounting. They may also complete a Bachelor of Science in Accountancy degree. This degree program is described on page 70. Students preparing to sit for Certified Public Accounting (C.P.A.) examinations in any state should consult the Department of Economics and Business.

Agriculture

Although Calvin College does not offer a degree in agriculture, Calvin does offer basic courses which can be applied towards a degree at agriculture colleges such as those at Michigan State University, the University of Guelph, or Dordt College. Calvin offers introductory courses in plant science and soil science. Students interested in such programs should consult Mr. Uko Zylstra of the Department of Biology.

Students wishing to transfer after two years to the College of Agriculture and Natural Resources at Michigan State University are advised to follow its "non-preference" program, postponing until the third year selecting an area of special interest. Michigan State offers more than twenty such areas ranging from agricultural engineering, animal husbandry, horticulture, fisheries and wildlife management, to forestry. The science requirements of that "non-preference" program are met by Biology 113, 114, 131, 201, 202, 222; Mathematics 131-132 or 161; and either Chemistry 103-104 plus a laboratory course in organic chemistry such as 253-254, or Physics 221-222 plus an additional course in physics. The liberal arts requirements are met by one course each in history, philosophy, religion and theology, with an additional course from one of the three; Economics 201-202 or 151 plus one additional course from economics, political science, psychology, or sociology; English 100 plus an additional course in English; Communication 100; and one additional course in the fine arts.

A similar program is also possible at the Ontario Agricultural College of the University of Guelph. Students who enroll at Calvin College after Grade XII can apply to transfer after their sophomore year. The program at Guelph leads to a Bachelor of Science Degree in Agriculture after three additional years. The recommended program for such students is Biology 113, 114, 131, 201, 202, 222;

Mathematics 161, 162; Chemistry 103, 104, 253, 254; Physics 221, 222; English 100; Economics 151; and other courses chosen from those that meet core requirements.

Students who plan to transfer to the agriculture program at Dordt College are advised to complete the following courses at Calvin: Biology 113, 114, 131, 201, 202, 230; Chemistry 103, 104; Economics 151, 207, 318; English 100 plus a course in English literature; one fine arts course; one foreign language course at the 200-level; History 101 plus an additional history course; Philosophy 153; one course in political science, psychology, or sociology; and one course in religion and theology.

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 Department of Art or Mr. James Bosscher of the Department of Engineering. The program incorporates a significant portion of the basic core curriculum as well as of the professional requirements of the profession. A typical program would be:

<i>First year</i>	COURSES
Art 231	1
English 100	1
Engineering 103	1
Computer Science 100 or 151	1
Mathematics 161, 162	2
Interdisciplinary W10, Christian Perspectives (interim)	1
Economics 151	1
Philosophy 153	1
Physical Education	½
 <i>Second year</i>	 COURSES
Art, studio drawing or design	2
Chemistry, if none in high school; biology; or psychology	1
Physics 221, 222	2½
Economics, history, political science or sociology core	2
Literature core	1
Religion and theology core	1
Communication 100	½

Business Administration

Balanced preparation for a business career is provided by meeting the general degree requirements (pages 46–48) and the business concentration in the Department of Economics and Business. This program provides a minimum of thirteen courses—the equivalent of forty-five semester hours in business, economics, and related mathematics and computer science courses. See page 116 for a full description of business 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 W10 or elective	1
Psychology or sociology core	1
English 100	1
History 101 or 102	1
Foreign language	2
Mathematics 131, 132, or alternate mathematics cognate	2
Physical education	½
Religion and theology core	1
<i>Second year</i>	COURSES
Art, music, or speech core	1
Biological science	1
Business 201, 202	2
Economics, 221, 222	2
Philosophy 151-152 or 153	1-2
Physical education	½
Communication 100 or 240	½
Elective	2
<i>Third year</i>	COURSES
Business 360	1
Business 370	1
Business 325, 326, or Economics 323, 324	1
Computer Science 100 or 131	1
Philosophy 205 or 207	1
Physical science core	1
Religion and theology core	1
Electives	2
<i>Fourth year</i>	COURSES
Business 380	1
Economics 331-339, or second course from 323-326	1
Business or economics departmental elective	1
Literature core	2
Electives	4-5

Communication Disorders

Students who wish to enter the fields of speech correction, such as speech-language pathology and audiology, may qualify for the degree of Bachelor of Science in Communication Disorders from Calvin College. The adviser for the program is Mr. Marten Vande Guchte of the Department of Communication Arts and Sciences.

Students must complete a designated program of twenty-seven courses at Calvin and a year's work at Michigan State University. A three year certificate is awarded after the satisfactory completion of the courses at Calvin, and the degree is granted after the successful completion of the courses at Michigan State University. The program is appropriate for students wishing to do graduate work in speech-language pathology or in audiology.

The Liberal Arts requirements are: one core course each in history, philosophy, and religion with an additional course from one of the departments; Biology 105 and 106 or equivalent courses; Physics 223; Mathematics 131; Psychology 151 and 204; a core course in either economics or political science; a core course in literature plus an additional course in literature, fine arts, or foreign culture; English 100 and 329; and a half course of credit in basic physical education.

The required courses in the Department of Communications Arts and Sciences are: 100 or 214, 110, 150, 203, 215, 216, 307, and 308.

Students wishing to practice speech therapy in the schools will also need to seek appropriate teacher certification. Those wishing to practice in a bilingual setting should study the appropriate second language while at Calvin.

Engineering

Students wishing to become engineers may follow two different programs. They may complete a four-year program at Calvin leading to a Bachelor of Science in Engineering with a concentration in civil, electrical, or mechanical engineering. They may also complete three years at Calvin before transferring to another school to complete their engineering degree. Normally students who transfer study one or two additional years and may receive a Bachelor of Science in Letters and Engineering from Calvin if they have completed twenty-seven course units at Calvin, including certain designated courses.

The chairman of the Department of Engineering is Dr. Lambert Van Poolen. The programs are described on page 72.

Law

There is no prescribed program specifically designed for the student planning to enter a law school after graduation. Law school applicants must have a college degree and must take the Law School Admission Test, but law schools do not require that applicants have taken specific courses or have a particular major concentration. Prospective law school applicants should complete the requirements for a Bachelor of Arts degree as they are listed on page 46. The prelaw adviser, Mr. Charles Strikwerda of the Department of Political Science, can advise students on suitable electives and can help them plan programs which provide good preparation for law school. Since admission to law schools has become very competitive, some students may be advised to plan programs which will also prepare them for alternate careers in other fields such as business, social work, or teaching. Prewlaw students should declare they are prelaw at registration time and are advised to consult the prelaw adviser before or during each semester's registration. Juniors and seniors, whatever their field of major concentration, should choose their electives with care and in consultation with the prelaw adviser.

Medicine and Dentistry

All students planning to enter the premedical or pre dental programs should consult Mr. Peter Tigchelaar of the Department of Biology, faculty adviser of the

premedical and pre dental programs. Students should also note the general college admission requirements on page 17.

A student may select any major concentration and still meet the entrance requirements for most medical and dental schools. However, for most students a concentration in biology is suggested.

The minimum science requirements for entrance into nearly all medical or dental schools are met by: Biology 131, 202, 323, and one course unit from 264, 321, 331, 334, and 336; Chemistry 103–104 and 261–262; and Physics 221–222 or the equivalent. Mathematics 161–162 is recommended and is required by some medical schools.

Because a few schools have unique requirements, students should consult with Mr. Tigchelaar to determine specific requirements of the schools to which they intend to apply.

Premedical and pre dental students normally should take their Medical College Admissions Test (MCAT) or Dental Admissions Test (DAT) in the spring of their junior year and should apply for admission to the medical or dental school during the summer prior to their senior year.

Most medical and dental schools give preference to students who complete a four-year college course. However, students with exceptionally high qualifications who have completed only three years of college may be accepted by dental and medical schools. Such students who wish to secure a baccalaureate degree from Calvin College on the combined curriculum plan must complete twenty-seven courses, including eleven courses from biology, chemistry, and physics, and the eleven designated core courses in subjects other than foreign language, mathematics, and the sciences. 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 degree of 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. Larry Louters of the Department of Chemistry. The following courses are prescribed: Biology 131, 205, 206, 264, 334, and 336; Chemistry 103, 104, 253, 254, and one other; one mathematics course from 161 or 131; English 100; Physics 223; 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 W10; 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.

Students should apply to accredited schools of medical technology during the fall semester of their junior year. Calvin College is affiliated with the schools of Medical Technology at Blodgett Memorial Medical Center, Butterworth Hospital, and Saint Mary's Hospital, all of which are in Grand Rapids, and with West Suburban Hospital in Oak Park, Illinois. Students may do their clinical internship at these or other approved institutions to which they are admitted.

A typical student program is as follows:

<i>First year</i>	COURSES
Biology 131, 205	2
Chemistry 103, 104	2
English 100	1
Foreign language (See paragraph above)	2
History 101 or 102	1
Interim	1
Physical education	½
<i>Second year</i>	COURSES
Biology 206, 264, 334	2
Chemistry 253-254 or 261-262	2
Other required courses	4
Interim	1
Physical education	½
<i>Third year</i>	COURSES
Biology 336	1
Chemistry 201, 304, or other chemistry course	1
Other required courses	4
Physics 223	1
Free elective	1
Interim, biology	1
<i>Fourth year</i>	
Internship in an accredited school of medical technology.	

The Ministry

The Association of Theological Schools (A.T.S.) recommends that presemenary students develop to a satisfactory degree the ability to think independently, to communicate effectively, to do research, and possess a basic general knowledge of past and present culture through studies in the humanities and the natural and social sciences. The A.T.S. also states that Biblical languages may be acquired in the presemenary period, that Latin is important, and that modern languages are valuable. The A.T.S. discourages concentrations in the study of religion which would duplicate later seminary work and which would narrow the liberal arts base for later theological studies. Presemenary students are advised to consult the catalogs of the seminaries which they intend to enter for their specific admission requirements. Catalogs are available in the library.

In order to qualify for admission to Calvin Theological Seminary in any of its programs the student should meet all of the regular college requirements for a bachelor's degree as well as the specific course requirements of the seminary for

the specific programs. A grade point average of 2.67 or higher is required for admission. Concentrations of particular relevance to theological studies are: English, Greek, history, philosophy, psychology, and sociology.

To enter the Master of Divinity (M.Div.) program, 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
Modern foreign language (See paragraph below)	0-4
Science	2
Philosophy (excluding courses in logic)	3
Religion and theology	2
Communications	2

The seminary expects that Calvin College students planning to enter the Master of Divinity program will satisfy the above requirements by including the following courses in their programs; a course in educational psychology or Psychology 201 or 204, Greek 205-206, History 301 or Classics 211, 311, 312, at least two philosophy courses chosen from the Intermediate or Advanced Historical Courses, and Communication 100 and 200. Communication 203 and 240 are recommended and, in exceptional cases, either of these courses may be substituted for Communication 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.

Calvin Seminary's Master of Church Education program is for persons who, though not seeking ordination, wish to prepare themselves for other positions of leadership in the church, particularly in its educational ministry. The courses required for admission are typically met by the college graduation requirements with the addition of two courses from education and psychology, including a course in educational psychology.

Calvin Seminary's Master of Theological Studies program is designed for those who do not seek ordination but desire a theological education in support of various vocational objectives. Specific requirements beyond those required for graduation from the college include four courses in Greek and competence in a modern foreign language through the second-year college level.

Natural Resources and Related Fields

Natural Resources programs may be in forestry, wildlife management, fisheries, regional planning, environmental education, outdoor recreation, resource ecology, resource economics and management, resource policy and law, and environmental advocacy. Because of the great variety of programs and differences in their requirements, students interested in any of these areas should consult Mr. A. Bratt of the Department of Biology early in their college careers.

There are at least three educational paths a student may follow who wishes to acquire professional competence in these areas:

1. Many students complete an appropriate undergraduate degree which is then followed by graduate study. In some areas, this is the normal academic preparation. Students should work out their undergraduate programs with the adviser to make certain that they meet the requirements of the various graduate schools.
2. Some students complete two years at Calvin, planning their programs to permit transfer into professional programs elsewhere. Typically such students should take Biology 131, 232, 233, 234, Chemistry 103, 104, Computer Science 141 or 151, Mathematics 131-132 or 161-162 and, if interested in fisheries, Chemistry 261-262. The remaining courses should be selected after consulting the requirements of the professional programs and, in most cases, should be in humanities and social sciences.
3. For many students the most direct path into one of the fields of natural resources is through a combined curriculum program involving Calvin College for three years and a school of natural resources for two more. Graduates from these programs receive two degrees, a Bachelor of Science in Letters and Natural Resources from Calvin and a second degree, typically a master's degree, from the cooperating university. The Calvin degree requires the completion of at least twenty-seven courses in the program at Calvin College.

The typical cooperative program in forestry requires Biology 131, 232, 233, 234, and three additional courses in biology such as 341, 346, and 352; Mathematics 161-162 or 131-132; Geology 105 or 151; and a two course sequence in physical science from Chemistry 103-104, 113-114, Physics 221-222, or Chemistry 113 with Physics 223 and appropriate core courses in other subjects.

The cooperative program in forestry with the School of Natural Resources at the University of Michigan leads to a Master of Forestry degree. Although the specific requirements are being modified, the program listed above is generally appropriate. Students are advised to elect Psychology 151 or Sociology 151 as an option, to complete Mathematics 131-132 rather than 161-162, to take a course in chemistry and a course in computer science. Students planning to attend the University of Michigan are expected to enroll in a summer natural resources camp session at Camp Filibert Roth following their first year at the university.

Calvin College is also a participant in the Cooperative College Program of the School of Forestry and Environmental Studies of Duke University in Durham, North Carolina. The program is designed to coordinate the education of students from selected undergraduate schools with graduate programs in the broad area of resources and environment offered at Duke and leads to the Master of Forestry (MF) or the Master of Environmental Management (MEM). Appropriate undergraduate majors may be in one of the natural or social sciences, pre-engineering or business, natural resources, or environmental science. Students may enter after three years of undergraduate study or after graduation from Calvin, but in either case, certain courses must be completed.

The master's programs at Duke require sixty semester hours beyond the junior year and require an initial summer session plus four semesters of study. The requirements are reduced for students who complete the bachelor's degree with relevant undergraduate work of satisfactory quality.

Michigan State University also provides training in various sorts of natural resources fields. The two year "non-preference" program described under Agriculture on page 61 prepares students to enter these programs. Students can transfer to other universities as well. The course requirements listed above are typical and serve as general guidelines.

Nursing

Students interested in a baccalaureate nursing program have two options at Calvin College. They may follow a four-year sequence leading to a Bachelor of Science in Nursing (B.S.N.) degree through the Hope-Calvin Department of Nursing, or they may begin the program at Calvin and complete the nursing component at another college or university.

Hope-Calvin B.S. in Nursing Program. The cooperative nursing program with Hope College is described on page 75. Students complete a two-year prenursing program before applying for admission to the Department of Nursing. Admission is selective. Upon the completion of the requirements, students receive the B.S.N. degree and are eligible to take state licensing examinations.

B.S. in Nursing Transfer Programs. A Bachelor of Science in Nursing program may also be begun at Calvin and be completed at another college or university. Students interested in such programs involving a possible transfer to another school should work out their programs with the Director of Health Science Programs, Mr. Richard Nyhoff of the Department of Biology.

Pharmacy

Students wishing to become pharmacists may complete two years at Calvin before transferring to a school of pharmacy for their final three years. A prepharmacy program which satisfies the requirements of the School of Pharmacy at Ferris State College in Big Rapids, Michigan, is given below. Students wishing to transfer to other schools should correspond with those schools and consult the pharmacy adviser, Mr. Richard Nyhoff of the Department of Biology, to determine appropriate programs. Students following normal programs should apply for admission to a school of pharmacy early in their second year.

<i>First year</i>	COURSES
Biology 131, 205	2
Chemistry 103, 104	2
Mathematics 110 and 161, 161 and 162, or 131 and 132	2
English 100 and 200, 235, or 332	2
<i>Second year</i>	COURSES
Biology 206 and 201 or 217	2
Chemistry 261, 262	2
Physics 223 or 221-222	1-2½
Economics 151	1
Political Science 201	1
Psychology 151	1

Recreation

Calvin's recreation program is described in the following section on the Department of Physical Education.

Other Professional Programs

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

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 a prescribed program of concentration.

Before applying for admission to the program a student must have completed three studio art courses. Additional requirements for admission and of the program are available from the chairman of the Department of Art.

The required eighteen-course program consists of three basic art courses (205, 209, 210), four from introductory courses to the various media (310, 311, 320, 325, 350, 360); four intermediate and advanced studio courses from 309, 312, 313, 314, 315, 321, 322, 326, 327, 351, 352, 361, and 362; four courses in history of art including 231 and 232 with two others from 233, 235, 237, 238, 240, 241, and Classics 221; two advanced art interims; and 395. No more than eighteen courses in art may be applied to the degree. This program is not appropriate for those seeking teacher certification.

The liberal arts core must include:

1. Six courses from the contextual disciplines (History 101 or 102, Philosophy 153 and 208, Religion and Theology 103 and 301, and an additional core course from history, religion and theology, or Interdisciplinary 100),
2. One core course from mathematics and the natural sciences,
3. One core course from economics, political science, psychology, and sociology,
4. Three course units from English and American literature, music, and speech with courses in at least two departments and at least one in literature,
5. The basic core requirements in English 100, speech, and physical education, and
6. A foreign language through the 202-level or two approved courses in foreign culture.

Bachelor of Science in Accountancy Degree

The Bachelor of Science in Accountancy degree is intended for students who want to prepare for a career in accounting in the context of a Christian liberal arts

education. The program requires sixteen course units in the Department of Economics and Business and at least eighteen course units in other departments.

The program can be used to prepare graduates for the Certified Public Accounting (C.P.A.) examinations and can meet the Michigan requirements. Students preparing for the examinations in any other state should consult the department.

Students may also qualify themselves in accounting by completing the Bachelor of Arts program with a business major plus an accounting emphasis. Such programs should be worked out with a faculty adviser.

The Bachelor of Science in accountancy program requires eight courses in accounting (Business 201, 202, 301, 302, 305, plus three from 306, 310, 311, and 315), eight courses providing a general background in business and economics (Business 350, 360, 370, 380, Economics 221, 222, plus two from designated courses), and three courses in mathematics and computer science.

In addition to the specified courses from the Department of Economics and Business, the student must complete eighteen courses in other departments which must include one core course each in history, philosophy, and religion and theology, plus an additional course from these departments or Interdisciplinary W10, Christian Perspectives on Learning; a course in the natural sciences; a course in political science, psychology, or sociology; a course in English or American literature; a course in the fine arts or foreign culture and another course in the fine arts or literature (If a student has not completed a foreign language through the second year college level one of the courses in the fine arts and literature must be a foreign culture course.); English 100, Communication 100 or 240, and a half course in basic physical education.

A model program for the Bachelor of Science in Accountancy is:

<i>First year</i>	COURSES
English 100	1
History	1
Mathematics 131-132 or alternative mathematics cognate	2
Philosophy core	1
Psychology, sociology or political science core	1
Religion and theology core	1
Fine arts or foreign culture course	1
Interim elective	1
<i>Second year</i>	COURSES
Business 201, 202, 360	3
Economics 221, 222	2
Physical education	½
Communication 100 or 240	½
Computer science	1
Literature core	1
Natural science core	1
Interim elective	1
<i>Third year</i>	COURSES
Business 301, 302, 306, 350, 370	5
Business 325, 326, Economics 323, 324	1
Arts or literature core	1
History, philosophy, or religion and theology core	1
Interim elective	1

<i>Fourth year</i>	COURSES
Business 310, 311, or 315 (all 3 for CPA candidates)	2
Business 305, 380	2
Economics 331-339, or a second course from 323-326	1
Electives (may include 319 for CPA candidates)	3

Bachelor of Science in Engineering Degree

Students at Calvin College may prepare to be engineers by following a four-year program leading to a Bachelor of Science in Engineering (B.S.E.) degree with concentrations in civil, electrical, mechanical, or general engineering. (Students may complete three years at Calvin before transferring to another school to complete a similar degree. This second option is recommended for students wishing to pursue concentrations not offered at Calvin.) Accreditation for the B.S.E. will be sought from the Accreditation Board for Engineering and Technology (ABET). Such degrees are intended to prepare graduates for entry-level employment as engineers and for graduate study. Students interested in engineering should consult the chairman, Mr. Lambert Van Poolen.

Students in both tracks follow a common program for the first two years, at the end of which they apply for admission to the Department of Engineering. This common program requires twelve and one quarter technical and basic science courses and seven from the liberal arts core. The common model program is as follows:

<i>First year</i>	COURSES
Chemistry 103	1
Engineering 101, 102	1½
Mathematics 161, 162	2
Physics 126, 186	1¼
Interdisciplinary W10, history, religion and theology core	1
Economics 151	1
English 100	1
Computer Science 141	½
Physical education, basic	½
<i>Second year</i>	COURSES
Engineering 202	1
Engineering 205	1
Engineering 206 or 208	1
Mathematics 231, 261	2
Physics 225	1
Social science core	1
Philosophy 153	1
Literature core	1
Communication 100	½

ADMISSION

The minimum requirements for admission are the completion of the common model program with a minimum cumulative grade point average of 2.3, a minimum grade of C- (1.7) in Chemistry 103, Computer Science 141, Mathematics 161, 162, Physics 126, 186, 225, and a minimum grade of C (2.0) in the engineering courses and in Mathematics 231 and 261.

Students wishing to transfer from another school should apply to the Office of Admission. In general, transfer students must meet the same course requirements as students who begin their programs at Calvin, must have had a cumulative grade point average of at least 2.5 in their previous college education, and will receive credit for no course completed with a grade below C (2.0). In accord with Calvin's commitment to an integration of the Christian faith with professional engineering education, transfer students must take at least one liberal arts course each semester they are at Calvin. Furthermore, if they are in the three-year program they must spend at least two semesters at Calvin as full-time students; if they are in the four-year program they must spend four semesters.

Students must apply for admission to the Department of Engineering during the semester in which they are completing the common model program. At that time they must indicate if they wish to follow the three- or four-year program; those pursuing the four-year program must select a civil, electrical, mechanical, or general engineering concentration. After a student is accepted, the chairman of the department will prepare a counseling sheet with the student, indicating the remaining requirements. Probationary admission is available to assist certain students. Students who are ready to take 300-level courses but who have not completed the required courses with the stipulated minimum grade or who have not achieved the minimum required cumulative grade point average may be given probationary admission to the program. Such students may not have more than three course deficiencies nor may their cumulative grade point average fall lower than 2.2 and, furthermore, all deficiencies must be removed within a designated period of time, not to exceed one year. Students who fail to meet these conditions are not eligible to apply for admission to the program at a later date. Students requesting probationary admission should complete the Form to Request Probationary Admission and submit it to the departmental chairman. As an alternative to probationary admission, students may delay taking 300-level courses until they have met all requirements for regular admission to the program.

THIRD AND FOURTH B.S.E. YEARS

The final two years of the B.S.E. program require eighteen courses—ten in engineering, four liberal arts courses, a basic science course, an advanced mathematics course, a business course, and an interim course integrating the humanities and technology. Courses can be chosen to provide concentrations in civil, electrical, mechanical engineering and, in consultation with the department, in general engineering. Electives require departmental approval.

<i>Civil engineering concentration, third year</i>	COURSES
Engineering 305, Mechanics of Materials	1
Engineering 309, Fluid Mechanics	1
Engineering 310, Thermodynamics	1
Engineering 320, Hydraulic Engineering	1
Engineering 326, Structural Analysis	1
Basic science elective	1
Fine arts core	1
Religion and Theology core	1
Interim in the humanities and technology	1

<i>Civil engineering concentration, fourth year</i>	COURSES
Engineering 313, Soil Mechanics and Foundation Design	1
Engineering 327, Structural Design	1
Engineering 340, Senior Design Project	1
Engineering elective	1
Advanced mathematics elective	1
Business 358, Business Aspects for Engineers	1
Philosophy core	1
Literature core	1
Engineering Special Topic, interim	1
<i>Electrical engineering concentration, third year</i>	COURSES
Engineering 304, Fundamentals of Digital Systems	1
Engineering 307, Network Analysis II	1
Engineering 311, Electronic Devices and Circuits	1
Engineering 312, Analog Computation, optional	½
Engineering 330, Electronic Circuits, Analysis, and Design	1
Basic science elective	1
Mathematics 333, Advanced Analysis	1
Philosophy core	1
Religion and Theology core	1
Interim in the humanities and technology	1
<i>Electrical engineering concentration, fourth year</i>	COURSES
Engineering 315, Control Systems	1
Engineering 325, Digital Circuits and Systems Design	1
Engineering 336, Advanced Circuit Design	1
Engineering 340, Senior Design Project	1
Engineering elective	1
Business 348, Business Aspects for Engineers	1
Literature core	1
Fine arts core	1
Engineering special topic, interim	1
<i>Mechanical engineering concentration, third year</i>	COURSES
Engineering 305, Mechanics of Materials	1
Engineering 309, Fluid Mechanics	1
Engineering 310, Thermodynamics	1
Engineering 312, Analog Computation, optional	½
Engineering 316, Heat Transfer	1
Engineering 324, Materials and Processes in Manufacturing	1
Basic science elective	1
Fine arts core	1
Religion and Theology core	1
Interim in the humanities and technology	1
<i>Mechanical engineering concentration, fourth year</i>	COURSES
Engineering 317, Engineering Instrumentation	1
Engineering 329, Machine Design	1
Engineering 340, Senior Design Project	1
Engineering elective	1
Advanced mathematics elective	1
Business 358, Business Aspects for Engineers	1
Philosophy core	1
Literature core	1
Engineering special topic, interim	1

THIRD YEAR FOR STUDENTS PLANNING TO TRANSFER

A typical third year program for students planning to transfer to another school of engineering is given below. Students are advised to work out their own programs with the chairman to be certain that they meet the requirements of the other schools. Those who complete their degree at a recognized school of engineering after completing twenty-seven course units at Calvin may apply for a Bachelor of Science in Letters and Engineering degree from Calvin.

<i>Third year</i>	COURSES
Engineering elective	1
Technical electives from 200- and 300-level courses in biology, chemistry, engineering, mathematics, or physics	2
Engineering interim	1
Philosophy core	1
Religion and Theology core	1
Literature core	1
Fine arts core	1
Elective	1

Bachelor of Science in Nursing Degree

Calvin College, in cooperation with Hope College of Holland, Michigan, offers a Bachelor of Science in Nursing (B.S.N.) degree which affirms the distinctive mission of both colleges. The program seeks to provide broad educational and professional nursing experiences within the context of a Christian liberal arts education. Upon the completion of the degree, students are eligible to take state licensing examinations. Satisfactory scores enable a student to become a Registered Nurse (R.N.). Students should consult the chairman of the Department of Nursing, Miss Cynthia E. Kielinen, for further information.

Butterworth Hospital and the Holland Community Hospital serve as centers providing clinical opportunities for students to care for people who need the knowledge and skills of the nursing profession. Pine Rest Christian Hospital provides learning experiences in mental health nursing and other community agencies offer opportunities for students to care for clients outside of a hospital setting. Transportation to these agencies is the student's responsibility.

Students apply for admission to the department only after they have completed a two-year prenursing program. Those interested in nursing are asked to indicate their interest at the time they begin their studies at Calvin, and they will be counseled by advisers for the nursing program. A limited number of transfer students can be accepted.

The two-year prenursing program requires nine courses in the sciences and social sciences closely related to nursing (Biology 131, 205, 206, 336, Chemistry 113, 114, Psychology 151, 201, and Sociology 151) and nine additional liberal arts courses (history, philosophy, religion and theology, plus an additional course from these departments or Interdisciplinary W10; a course in literature taught in English; two courses in the fine arts which include foreign language and literature; a course in written rhetoric; a half course in speech; and a half course in basic physical education).

By January 15 of the sophomore year, students must apply for admission to

the Hope-Calvin Department of Nursing. Application forms are available in the department and at the registrar's office. To be eligible for admission to the nursing program, a student must have completed eighteen courses in the prenursing program with a minimum cumulative grade point average of C+ (2.3) and must have a minimum grade of C- (1.7) in each of the required nine courses in the natural and social sciences. Enrollment in the final two years—the clinical nursing year is limited, admission is selective, and completion of the prenursing program does not assure acceptance.

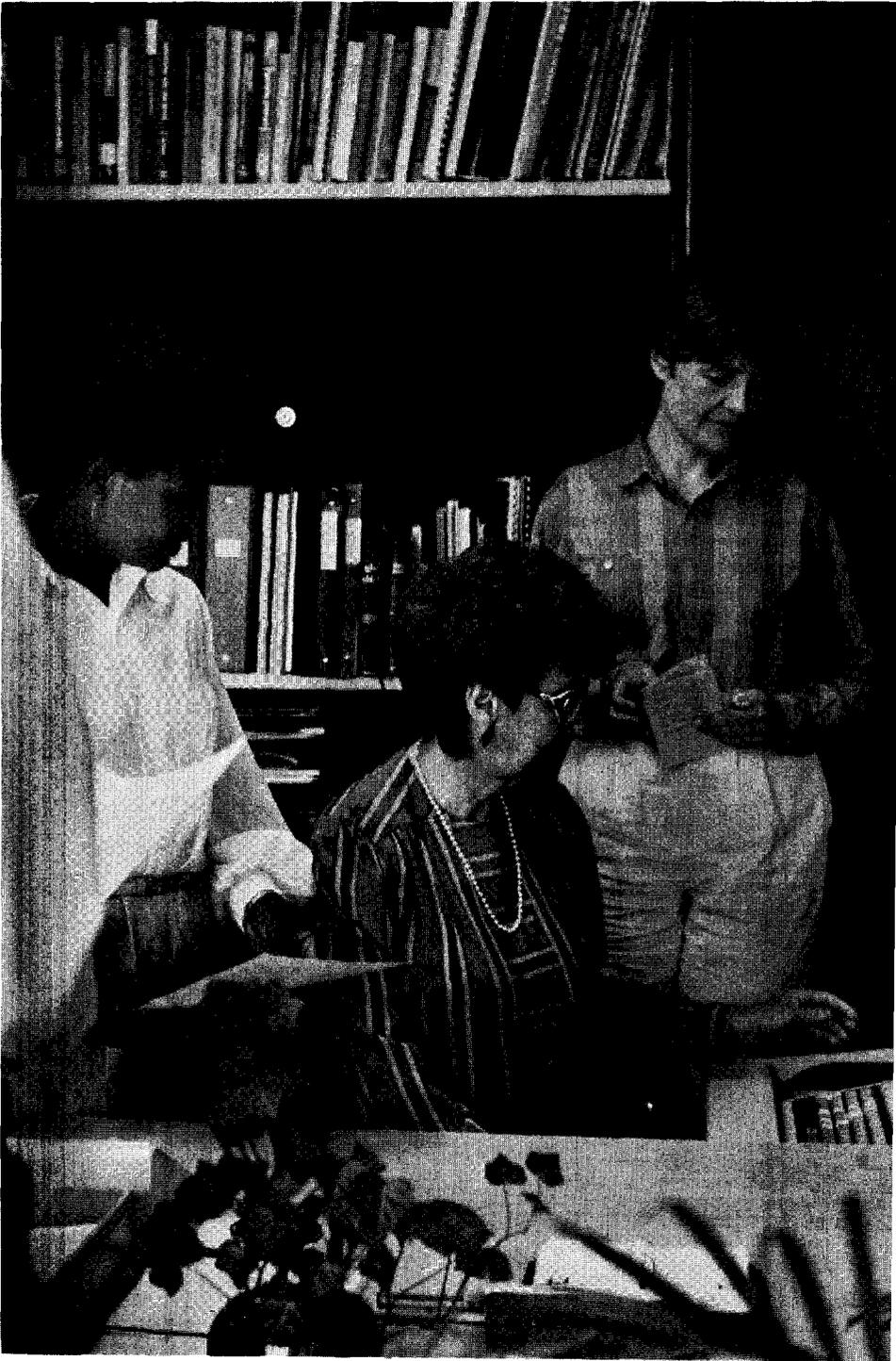
The clinical nursing program requires fourteen professional courses and four liberal arts electives. The required courses are: 301, 311, 321, 352, 373, and 375 in the junior year; and 401, 425, 472, 474, and 482 in the senior year.

The typical prenursing program is as follows:

<i>First Year</i>	
Biology 131, 205	COURSES 2
Chemistry 113, 114	2
Psychology 151	1
Sociology 151	1
English 100	1
Art, music, etc. core	1
Religion, history, philosophy or Interdisciplinary W10, core	1
Physical education	½
<i>Second Year</i>	COURSES
Biology 206, 336	2
Psychology 201	1
Religion core	1
History core	1
Literature core	1
Philosophy core	1
Art, music, etc. core	1
Communication 100	½
<i>Third Year</i>	COURSES
Nursing 301, 311, 321, 373, 352, 375	7¼
Elective	2
<i>Fourth Year</i>	COURSES
Nursing 401, 425, 472, 474, 482	6¾
Elective	2

The nursing courses are described on pages 166–168 under the Department of Nursing. Other courses are described under the department indicated.





Dean Corrine E. Kass

GRADUATE PROGRAMS

Christian graduate education

THE GRADUATE PROGRAMS, as well as the undergraduate programs, at Calvin college are based on the foundation of the Christian faith as reflected in the Reformed standards. This finds its expression at the graduate level in the study of disciplines and professional fields where students are encouraged to develop value judgments which are grounded in the knowledge of man's relationship to God, to himself, to his fellow man, and to the world, and which acknowledge the Lordship of Christ over all.

Calvin College offers two master's degree programs: a Master of Arts in Christian Studies and a Master of Arts in Teaching. In addition, post-baccalaureate non-degree programs are available for teacher certification (see page 59 for information).

Courses in this catalog numbered 500 and above and those marked with an asterisk (*) may be applied to graduate degree programs.

Master of Arts in Christian Studies Degree

Calvin's Master of Arts in Christian Studies is a one-year program of interdisciplinary graduate study, providing college graduates of any age and profession with a unique opportunity to integrate an authentic Christian perspective with a broad range of scholarly disciplines.

ADMISSION

The requirements for admission are: (1) an appropriate bachelor's degree from an accredited college or university with a grade point average of 2.8 or above, (2) Graduate Record Examination general test scores, (3) two letters of recommendation, at least one dealing with scholastic ability, (4) official transcripts, and (5) a completed application form, including an autobiographical essay of about five hundred words dealing with previous experience and future professional goals. Candidates with major deficiencies in their undergraduate programs or lacking preparation in areas critical to this program, such as Biblical studies or introductory philosophy, may be required to complete prerequisite courses in addition to the minimum courses required for the degree. Normally course work done previously at other institutions may not be applied to degree requirements. Inquiries and applications for admission should be sent to the Dean for Academic Administration. Deadlines for submitting applications and supporting materials

are the following: May 1 for summer session, August 1 for fall semester, and January 1 for spring semester.

REQUIREMENTS FOR THE DEGREE

To be eligible for the degree a student must complete a ten-course unit program with a cumulative average of B (3.0). Such programs normally require eleven or twelve months of fulltime study and are worked out with an adviser. Only courses completed with grades of C+ (2.3) or higher may be applied to the degree. Five of the course units must be graduate-only courses, including a two-course interdisciplinary sequence on "Christianity, Learning, and Culture"; a structured graduate reading course; and two units for a thesis. In addition, the student must complete at least five course units in a specific program area involving Christian perspectives on one of the following: the behavioral sciences, the fine arts, the humanities, the natural sciences, the social order, or theoretical thought. In addition to the course requirements, a student must pass a comprehensive examination in his or her program area.

Master of Arts in Teaching Degree

The Master of Arts in Teaching (MAT) program serves elementary and secondary teachers and administrators who wish further professional training and who need to satisfy the requirements for continuing certification.

Calvin's MAT is designed especially for teachers who are already provisionally certified and experienced in classroom teaching or administration, and who wish to attend a Christian college where academic excellence is pursued in the light of Christian commitment. The MAT provides college graduates with an opportunity to integrate an authentic Christian perspective with a broader or deeper range of knowledge and insight into the professional role of the teacher or administrator.

ADMISSION

The requirements for admission are the following: (1) an appropriate bachelor's degree from an accredited college or university with a grade point average of 2.8 or above; (2) Graduate Record Examination general test scores; (3) teacher certification, or eligibility for it; (4) normally one to two years of teaching experience; (5) two letters of recommendation, at least one dealing with teaching ability; (6) official transcripts, and (7) a completed application form, including autobiographical essay of about five hundred words dealing with previous experience and future professional goals. Inquiries and applications for admission should be sent to the Dean for Academic Administration. Deadlines for submitting applications and supporting materials are the following: May 1 for summer session, August 1 for fall semester, and January 1 for spring semester.

REQUIREMENTS FOR THE DEGREE

After students are admitted to the program in their declared area of interest, an adviser works out an appropriate program. All programs must include a minimum of nine courses, half of which must be taken in courses numbered 500 or above. The program must be completed within six years from the date of admission with a cumulative average of at least B (3.0 on a scale of 4.0) and only courses with grades of C+ (2.3) or higher will be applied to the requirement of the degree.

The minimum requirements are:

1. **Context of Education:** Two courses are required. At least one course must be from those approved in psychology or sociology and education (Education 512, 513, 535, Sociology 501) and one must be from approved courses in history or philosophy and education (Education 510, 581, and Philosophy 501).
2. **Concentration:** At least three courses must be completed in an approved group or departmental concentration. Programs of concentration are available in art, biblical and religion studies, English, history, mathematics, music, fine arts, language arts, learning disabilities (leading to state teacher endorsement), and science studies.
3. **Methods and Materials:** A course in curriculum must be completed in an area appropriate to the student's need and concentration.
4. **Project:** Students must complete a graduate project which is planned to synthesize their graduate experiences. The project proposal and the final form of the project must be approved by the project supervisor, the student's MAT adviser, and the Dean for Academic Administration.
5. **Electives:** Students must complete additional courses from the categories above or from elective courses to satisfy the nine-course requirement.

Academic probation and dismissal

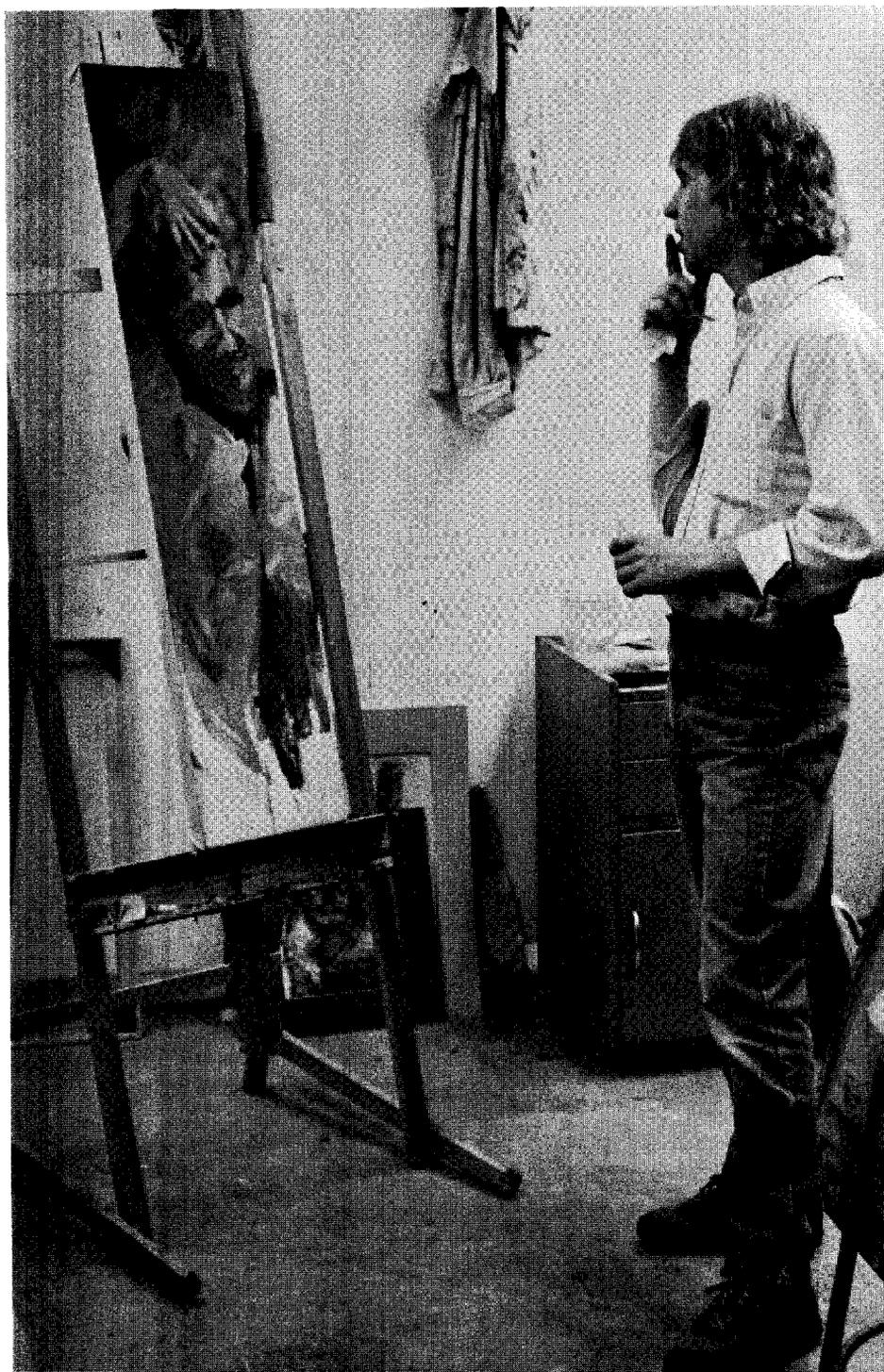
Graduate students will be placed on academic probation whenever their cumulative grade point average falls below 3.0. They will be advised in writing of their probationary status. They will be removed from probation if they raise their cumulative grade point average to 3.0. The Veteran's Administration will be notified of students receiving veterans benefits who have not been removed from probation after taking five course units.

Graduate students are subject to dismissal, when after completing four course units, their cumulative grade point average falls below 2.7. Such students will be informed in writing of their dismissal. The Veterans Administration will be notified of students receiving veterans benefits who are subject to dismissal. Graduate students who have been dismissed and who wish to be readmitted to one of the graduate programs must submit an application to the Graduate Studies Committee.

Application for degrees

In addition to the formal requirements for graduate degrees described above, students must work out an MACS or MAT Counseling Agreement with their graduate adviser and have it signed by this adviser and the Dean for Academic Administration. The Counseling Agreement is normally completed before students begin taking courses. Graduate students must meet all of the conditions specified in that agreement within six years to be eligible for a degree. They must file a formal application for a degree at the Office of the Registrar at least six months before the expected date of graduation. If students are also fulfilling requirements for a continuing teacher certificate or an additional teaching endorsement, they must make formal application to the Director of Teacher Certification not later than six months before they complete the certification requirements.





COURSES

Description of courses offered by the various departments

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 W10 through W49 have no prerequisites; those numbered W50 through W99 have either prerequisites or other conditions. Courses numbered 500 and above and those marked with an asterisk (*) may be applied to graduate degree programs.

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

Interdisciplinary¹

Courses in less commonly taught languages completed through supervised, self instruction are included in this section of the catalog and follow the traditional numbering of foreign language courses, 101, 102, 210, and 202. See page 51 for a description of the program.

210 History of Science. S, natural science core. An examination of the emergence of modern science in the sixteenth and seventeenth centuries and of the major developments in the natural sciences since then. The focus is on physics, chemistry, natural history, and selected topics in biology. Particular attention is given to the philosophical and religious background of scientific ideas, to the concept of scientific revolution, and to the problems of periodiza-

tion. Prerequisites: History 101 or 102 (preferred), one year of high school chemistry or physics, and one college science course, or consent of the instructor. Mr. A. Leegwater.

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, Mr. W. Smit.

301 Introduction to Bilingual Education.* This course will prepare teachers to be qualified to teach in classrooms where English is the second language. Students will be concerned with both the theory and the skills necessary to teach speaking, reading, writing, and comprehension in a bilingual situation. The course includes such matters

¹This section includes not only courses that are interdisciplinary but others as well that do not fit logically into any single department or which are in disciplines not otherwise offered at Calvin College.

as linguistics, language interference, vocabulary, sentence structure, idioms, teaching English as a second language, placement of the newly-arrived student, choice of learning materials, and the use of specialized audio-visual aids. Each student will observe and then practice in local bilingual classrooms. Paper and an examination. Prerequisite: Spanish 202. *Mrs. Y. Byam.*

346 American Studies Seminar. F and S, half to two course units. Four consecutive seminar modules in which four different public policy issues are addressed from a Christian point of view. The seminars are available through the Christian College Coalition's American Studies Program in Washington, D.C. and utilize the resources of the United States' capital. Prerequisites: concurrent registration in 356 (American Studies Internship) and acceptance into the American Studies Program.

356 American Studies Internship. F and S, half to two course units. Part-time work-study experience in Washington, D.C. through the Christian College Coalition's American Studies Program. Internships are individually arranged to complement the student's academic major or special interest. Prerequisites: concurrent registration in 346 (American Studies Seminar) and acceptance into the American Studies Program.

385 CCCS Research. F, one or two course units. This course is designed specifically to cover the academic work of the student fellows chosen annually for participation in the Calvin Center for Christian Scholarship. This program of studies aims at involving student fellows directly in the stated purpose of the Center to promote rigorous, creative, and articulately Christian scholarship which is addressed to the solution of important theoretical and practical issues in contemporary society. The topic for research varies from year to year. Student fellows normally register for one-unit credit for each of the semesters and the interim. No student may receive more than three course units of credit. Work is done in cooperation with the faculty fellows and under the direction of the project coordinator. Prerequisite: appointment to the status of student fellow in the Calvin Center for Christian Scholarship. *Staff.*

386 CCCS Research. I, one course unit. Continuation of 385. *Staff.*

387 CCCS Research. S, one or two course units. Continuation of 386. *Staff.*

GRADUATE COURSES

561 Christianity, Learning, and Culture I. F. This course deals both critically and constructively with two broad areas, Christianity and learning and Christianity and culture. It introduces students to the variety of approaches to these questions in the Christian tradition with particular attention to views in the Reformed tradition that have shaped the outlook at Calvin College. Prerequisite: admission to the Master of Arts in Christian Studies program. *Staff.*

562 Christianity, Learning, and Culture II. I. This course is a continuation of the fall course, concentrating on more specialized topics chosen after consultation of professors and students. Prerequisite: 561. *Staff.*

570 Workshop in Education. An intensive course for inservice teachers involving philosophy, theory, curriculum, and practice as they are brought to bear on an identified problem area of education. Although such courses may touch topics considered in regular courses, the primary focus of each workshop is on retraining teachers in newly recognized areas of need, in new materials, and in new approaches. Workshops may be offered by any department involved in teacher education. *Staff.*

590 Independent Study. F,I,S. Students normally register for this course in conjunction with a course in one of the disciplines. Prerequisite: admission to the Master of Arts in Christian Studies program. *Staff.*

594 Thesis Prospectus. S. A course for reading, preliminary research, and writing, preparing students for 595. Supervised by the designated thesis adviser. Prerequisite: admission to the Master of Arts in Christian Studies program. *Staff.*

595 Thesis. S. Required by the Master of Arts in Christian Studies program and supervised by the designated thesis adviser. *Staff.*

JANUARY 1986 INTERIM

W10 Christian Perspectives on Learning. An introductory study of the relationship between Christian faith and learning. Beginning with a consideration of some con-

temporary 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. P. De Boer (chairman)*.

W11 The Arts of England: Drama, Art, and Architecture. Students will spend ten days in London attending the theaters, museums, and churches for lectures and discussions of the dominant periods and movements in the English tradition. Students will attend eight plays, receive lectures, and be involved in discussion of the dramas. Art and theater lectures are given in the British Museum, National Gallery, Victoria and Albert Museum, and the Tate. In addition the interim will include a nine day lecture tour of the cathedrals of Canterbury, Winchester, Salisbury, Wells, Bath, a two day stop at Stratford to see performances of the Royal Shakespeare Company, Coventry, York (and a study of the York cycle plays), Lincoln, Ely, and Cambridge, returning to London for Westminster and the Henry the VII Chapel. Fulfills CAS interim requirement. Fee of approximately \$1500 for travel and lodging. *Mr. E. Boevé, Mrs. E. Boevé*.

W12 Our Daily Bread: Agriculture, Food and World Hunger. This course deals with aspects of food production, processing, and distribution in North America and selected Third World nations. Topics include: methods of food production ranging from subsistence agriculture to agribusiness, a consideration of the ecological and economic implications of each, and which proposed changes, if any, Christians should consider in order to bring about greater justice in the worldwide distribution of our daily bread. A final examination is required along with quizzes on the coursework and readings. *Mr. H. Aay*.

W13 Interim in Central America. A first-hand study of the political, religious, economic, and social problems that confront Central America. The students will

spend time in Honduras, Costa Rica and Nicaragua. Lectures, class discussion and interviews with Central Americans will be primary formal teaching modes. Recognizing the diversity of opinion on Central America, participants will attempt to speak with people representing as many perspectives as possible. Students will be required to do some preparatory reading and to write a daily journal. Spanish language skills desirable, but not essential. A reading list will be available from instructors by Thanksgiving. Approximate cost of \$1400. *Mr. S. Wykstra, Mr. R. Hoksbergen*.

W14 The History of Dance. This course deals with dance through the ages, from primitive through twentieth century forms, and its relationship to the culture and art of its time. Special attention is given to the use of dance in a religious context and its history as a liturgical form. Readings, films, and studio presentations. Final oral presentation, research paper, or choreographic project required. No previous dance experience required. *Mrs. E. Van't Hof*.

W15 Nazi Germany. A study of Nazi Germany, 1933-1945, concentrating on the origins and growth of Nazism, life in Hitler's Germany, and the last days of the Third Reich. The course is conducted in English. The following instructional techniques and media are employed: slides, movies, demonstrations, records, textbooks, quizzes, a final examination, conversations, lectures, presentations of projects, and eyewitness reports. *Mr. C. Hegewald*.

W16 Politics and the Bomb. A study of the interplay of politics, science, and ethics in making and evaluating of nuclear weapons policy. The course proceeds chronologically beginning with the discovery of nuclear fission in the 1930s and ending with current nuclear arms competition and negotiations. Some of the events and issues to be considered are the Manhattan project, the decision to drop the bomb, the adoption of deterrence policy, the development of weapons systems (e.g., ICBM, MIRV, and the stars wars initiative), and arms control measures (what has been done, what needs to be done). There are lectures, films, and guest speakers. A paper and a journal is required. *Mr. R. DeVries, Mr. A. Kromminga*.

W17 Rock 'N' Roll and American Society. This course brings a Reformed world

view into the arena of popular culture and provides a foundation for students to understand and evaluate popular music. This entails an exploration of the origins and history of the music as it is a reflection of the quest for identity and certainty in the American experience. After establishing tools for artistic evaluation of popular music, the factors influencing the roots of rock music are examined. Such factors include: the culture of the rural South, industrialism as a force in American life, World War II, idealism and the sixties, the romanticism of the seventies, and the new realism of the eighties. Special attention is given to the interplay of black and white cultures and the manifestations of that in the musical development. This course combines lecture with discussion, listening to and analyzing music, and viewing films. Several members of class will do an amateur reading/production of Robert Patrick's play, *Kennedy's Children*. Reading, examination, and song analysis. *Mr. W. Romanowski.*

W18 From Da-Da To Discourse: The Acquisition and Development of Language. In the first five or six years of life, most children accomplish a remarkable feat—they move from coo's, cries, and gurgles to sentences and discourses appropriate to their contexts. This course is primarily an examination of that accomplishment. Using readings, lectures, projects, discussions, quizzes, and movies, students will consider whether human beings have an innate language-learning capacity; what stages children move through as they develop their phonological, syntactic, semantic and pragmatic competencies; whether there are critical ages for some of these developments; what kinds of disabilities children can display; and what sorts of experiences should help children improve their speaking, reading, and writing abilities. *Mr. W. Vande Kopple.*

W19 Railroads in American History. This course considers the American railroad and its impact on the development of the United States. Major topics considered include: Historical development of the railroad as a means of transportation, its impact on the development of the country, the development of railroad technology to the present time, economic and legislative aspects of the industry, cultural impacts, and the place of the railroad in present day transportation policy in North America.

The objectives are to make the student aware of the impact the railroad has had on the development of North America, and to make the students sensitive to present day transportation policy and the place the railroad has, or does not have, in it. A textbook is used. Lectures, visual aids, library material, a short field trip, and guest speakers. Tests, a final examination, and a major paper are required. There are no prerequisites for the course. It is *not* a railroad buff's pleasure trip, but a serious inquiry into the roots of present day transportation problems in North America. *Mr. C. Sinke.*

W23 Business Ethics. An examination of moral concepts as they relate specifically to individuals in business organizations. A treatment of basic issues in the theory of normative ethics is followed by lectures and discussions focusing upon a series of specially prepared case studies. The course includes several lectures by distinguished leaders from the Christian business community. *Mr. G. Mellema.*

W50 Interdisciplinary Problem Solving. Students will develop problem-solving skills on campus and apply them during a week-long study in Appalachia. This course requires the class to describe, analyze, and resolve a large-scale, real-world, socio-technical problem: that of creating sustainable employment in an economically underdeveloped area. The solution involves legal, social, economic, and technical aspects. Formal approaches to problem specification and solution are presented and evaluated. The class will propose alternative solutions, and refine, redo or re-propose solution on site. Each student will be required to maintain a daily log/journal and to participate in a class report on proposed solution(s). Off campus travel is required. This course fulfills the requirements for a humanities and technology interim for the Bachelor of Science in Engineering degree. Fee of approximately \$150. Prerequisite: junior engineering standing or permission of the instructor. *Mr. J. Dodge, Mr. M. VanderWal.*

W51 The Bible and Psychology. This course aims to assist students interested in psychology in developing a world view which is both consistent with such Christian concepts as creation, fall, and redemption and with the scientific method as it is applied to psychology. The course exam-

ines different Christian approaches to integration. Selected psychological theories are studied in the light of different theological and scientific approaches. Readings are primarily of a theological nature but include a work dealing explicitly with integration. Two papers are required, one of which is presented orally in class, and a final examination. Prerequisite: Psychology 151. Mr. E. Johnson.

W52 An Introduction to Indonesia. Indonesia is the world's fifth most populated country. It is a potential world power not only because of its population but also because of its other vast resources. Indonesia is a member of OPEC and is characterized by the World Bank as a lower middle-income country. Average per capita income for 1982 was estimated to be equivalent to 580 US dollars. Approximately 3,000 of Indonesia's islands are inhabited although most of the population is located on Java. Indonesia is truly a melting pot of many cultures. This course explores the richness and diversity of Indonesian culture and society as well as its potential as a world power politically and economically. Indonesia's history, art, literature, and religion will also be explored. Class activities consist of lectures and seminars supplemented by guest presentations and films. Students will be required to make at least two class presentations of assigned topics. Several books of readings are assigned, and a final examination is required. This course serves as a good orientation for students participating in Calvin's summer study program in Indonesia during the summer of 1986. Prerequisite: sophomore standing or above. Mr. E. Van Der Heide.

W54 Philosophy of Technology. From Francis Bacon's *The New Atlantis* (1624) to B. F. Skinner's *Beyond Freedom and Dignity* (1971), many have seen technology based on science as the great hope for improving the human condition. Others, following the Industrial Revolution and especially in this last half of our century, have criticized this hope as a mirage, and regard technology as machine out of control. This course aims to develop an understanding of technology and its impact, and to assess some of the arguments of its proponents and critics. Drawing on recent philosophical writings, participants will first try to define what technology is, its relations to

science and to engineering, and the nature of technological knowledge and design. Participants will then examine some of the most significant critiques (and defenses) of technology, seeking to understand the underlying issues from a Christian perspective. Students will be evaluated through daily assignments, class participation, and a final paper. Prerequisite: one course in philosophy or permission of instructors. Mr. L. Van Poolen, Mr. C. Orlebeke.

W55 Christian Neo-Conservatism: Another Viewpoint on Politics, Economics, and Society. This course intends to offer an in-depth study, sympathetic yet critical, of a political movement which in many ways is the focal point of the domestic political controversies of our time, and which has seen an avowed proponent of its philosophy elevated to the Presidency of the United States. Students will examine the American and non-American roots of neo-conservative thought, and be introduced to the most significant literature of the movement. They will pay particular attention to the differing ideas in the Christian community regarding the proper definitions of such concepts as justice, freedom, and peace, and to the efforts of neo-conservative Christians, especially from the Lutheran and Catholic traditions, to develop clear alternatives to the approach of the liberal left. Some use is made of films and outside speakers. Students will be expected to report on a list of required readings and present a major paper. Intended primarily for upperclassmen, although exception may be made upon consultation with the instructors. Reading list will be available in December. Mr. H. VanderGoot, Mr. G. Harris.

W56 China—Past and Present. A three week tour of The Peoples Republic of China with visits to Beijing, Xi'an, Shanghai, Guilin, and Guangzhou via Tokyo and Hong Kong. The tour focuses on the history and culture of China and includes stops at major museums and historical and cultural sites. Students will be required to read two books and they will participate in two days of intensive study at Calvin prior to departure. During the trip students will keep a daily journal and participate in three or four class meetings. There are no course prerequisites, but students are urged to take courses during the fall semester which

would contribute to their knowledge of China. Prerequisites: sophomore standing and the permission of the instructor. Fee of approximately \$2,500. *Mr. C. Strikwerda.*

Academic support

E. Diephouse (director), A. Emerson, J. Heerspink, E. Greydanus, B. Morrison, R. Stegeman

ACADEMIC SUPPORT PROGRAM courses provide supplementary training and assistance in English, mathematics, and college-level study and reasoning skills. Class size and schedule are designed to give ample opportunity for individual instruction and personal conferences with instructors. All courses include training in study methods appropriate to the subject being studied.

Courses designed to review pre-college work, designated with numbers below 010, do not carry credit for graduation. They are, however, recognized by the registrar and the Office of Financial Aid as registered units, which count toward full-time status and toward financial aid eligibility. Students normally register for a non-credit unit as one-fourth of their academic load, i.e., in addition to three credit courses. Students who do this as a condition of admission or probation are generally eligible for a fifth year of financial aid.

Interim courses carry credit and are graded. Non-credit courses appear on student transcripts with grades of CR (*credit*) or NC (*no credit*) as an indication of whether or not coursework has been completed satisfactorily.

ASP courses are open to all students, with the permission of the instructor or the program director. Freshmen admitted on condition or returning on probation are normally required to enroll, so that instructors can provide academic counseling, course advising, and diagnostic testing. Other students can obtain any of these services or permission to take a review course by request at the ASP Office.

^{1.00}
003 Review of Written English as Second Language. F, non-credit. This course provides extensive practice in written English for students whose native language is other than English. It includes study of grammar, vocabulary development, and instruction in writing. Students are assigned to this class on the basis of a placement test administered at the time of registration. *Staff.*

^{1.00}
004 Pre-College Mathematics for the Liberal Arts Student. F and S, non-credit. A review of high school mathematics, from

fractions and decimals to basic algebra and geometry, with intensive practice in mechanics. Materials are taught with particular emphasis on development of mathematical thinking and problem-solving. The course is designed to bring students whose mathematics background is weak to the level of competence needed for Mathematics 100, Economics 151, Astronomy 110, Biology 111, Chemistry 110, Physical Science 110, and other core courses. Not intended for students in mathematics-oriented majors. *Mrs. E. Greydanus*

1.00
005 **Pre-College Mathematics for the Science Student.** F and S, non-credit. This course is an intensive study in the mechanics of algebra, manipulation of algebraic expressions, and graphing. Materials are presented with an emphasis on development of problem-solving skills and mathematical reasoning. The course is intended as preparation for Mathematics 131 or 110 for students in mathematics-oriented majors whose previous experience in mathematics is inadequate. *Staff.*

006 **Methods and Motivation for College Study.** F and S, non-credit, half course. This course presents methods of classroom and textbook study skills for college course work and considers problems of self-moti-

vation and self-discipline, with reference both to principles of the Christian faith and to resources within the college community. Students are required to attend laboratory sessions for application of these principles to their other course work. Prerequisite: concurrent registration in a reading and lecture course such as a history, psychology, sociology, or religion course. *Mrs. J. Heerspink, Mrs. R. Stegeman.*

007 **Pre-College Grammar Review.** F and S, non-credit, half course. This course, taught concurrently with certain sections of English 100, provides supplementary instruction and exercises in grammar and sentence writing. *Mrs. B. Morrison.*

Art

Professors E. Boevé, R. Jensen (chairman) C.S. Overvoorde
Associate Professors H. Bonzelaar, C. Huisman
Assistant Professor C. Young

THE ART DEPARTMENT of Calvin has been conceived within the framework of the liberal arts tradition and offers four distinct programs of concentration for students with different interests. It also offers minors in art education and in art history. Students must have earned a grade of at least C (2.0) in 205 before applying for admission to any concentration.

The minimum major program in art is 205, 209, 210, 231, 232, two introductory studio courses, and three intermediate or advanced studio courses. All art majors are required to participate in senior exhibition during the spring semester of their senior year.

The minimum major program in art history is 231, 232, six courses from 233, 235, 236, 238, 240, 241, and Classics 221, and an approved interim course in art history. Philosophy 208 is recommended. The minor requires 231, 232, and four from 233, 235, 237, 238, 240, 241, and Classics 221.

The Bachelor of Fine Arts (B.F.A.) program, which has a greater professional emphasis, is described on page 66. This program is not a preparation for teacher certification.

Both the B.A. and the B.F.A. programs can be planned to provide a graphic communications or photography emphasis.

The ten and a half course major for teachers, k-12, must include 205, 209,

215, 216, 231, 232, 310 or 311, 320 or 325, and 210 or 240. The seven course teacher education minor is 205, 209, 215, 216, 231, 232, and one studio course from 310, 311, 320, 325, 350. All art education students are required to participate in the senior exhibition during the spring semester of their senior year. Directed teaching in art is available only during the spring semester. The adviser for this program is Mrs. H. Bonzelaar.

The core requirements in the fine arts may be met by 151, any art history course, and, for students in elementary education programs, 215.

151 Introduction to Art. F and S, core. A survey of art, artists, and art criticism. Introductory studio activities are planned to acquaint the student with composition in art. Tests, papers, and audio-visual presentations, lectures, and readings related to the purpose and nature of art and art criticism. Not part of an art major program. *Staff.*

STUDIO COURSES

205 Design. F and S. A course that teaches two- and three-dimensional design through the use of basic art elements and principles. Materials fee. *Staff.*

209 Introduction to Drawing. F and S. Students are taught composition while being introduced to drawing media and to the basic proportions of the human figure. The course includes the historical development and terminology of drawing. Prerequisites: 205. Materials fee. *Mr. C.S. Overvoorde.*

210 Intermediate Drawing.* F and S. A continuation of 209 further developing skills in the drawing media and the understanding of the proportion and volume of the human figure. Materials fee. Prerequisite: 209. *Mr. R. Jensen.*

215 Principles of Elementary Art Education. F and S, core for students in elementary education and recreation majors. The course introduces the nature of art and philosophy of art in education and includes methods and techniques for organizing and motivating art introduction on the elementary school level. The introduction to the art man has produced illustrates how art has served culture over the ages. The course includes lectures, demonstrations, and art teaching experiences in the school. Research paper required. *Mrs. H. Bonzelaar.*

216 Principles of Secondary Art Education. S. The course focuses on the philosophy and curriculum of art in education, and

on methods of organizing and motivating art on the secondary education level. An exploration of media including enameling, jewelry-making, weaving, and batik. Prerequisites: 205 and 209. *Mrs. H. Bonzelaar.*

309 Advanced Drawing.* F and S. A more advanced course in drawing providing an opportunity for students to search and experiment with new ideas and forms and to develop personal ideas and themes. Materials fee. Prerequisite: 210. *Mr. R. Jensen.*

310 Introduction to Sculpture.* F and S. Students are introduced to the basic sculptural techniques of modeling, carving, mold-making, constructing, casting, and assembling through slide lectures and demonstrations. Each student selects one technique with its related materials for his primary concern during the semester. Assigned readings. Materials fee. Prerequisite: 209. *Staff.*

311 Introduction to Ceramics.* F and S. An introduction to clay and glazes and their use. Emphasis is on hand-building techniques as a means of discovering the expressive and functional possibilities of the medium. Readings on the history of ceramics are required. Materials fee. Prerequisite: 209. *Mr. C. Huisman.*

312 Intermediate Sculpture.* F and S. A continuation of 310 involving further study of sculptural techniques. Students execute a series of sculptures which are related in material or concept. They will also study twentieth century sculpture as it relates to their own productions. Materials fee. Prerequisite: 310. *Staff.*

313 Intermediate Ceramics.* F and S. A continued exploration of the medium, including the use of the potter's wheel, emphasizing personal expression. Technical readings and batch formula testing of one or more glazes is required. Materials fee. Prerequisite: 311. *Mr. C. Huisman.*

314 Advanced Sculpture.* F and S. A continuation of 312 with a primary concern for developing each student's skills and individual expressive direction. Materials fee. Prerequisite: 312. *Staff.*

315 Advanced Ceramics.* F and S. A continuing study of the historical and technical aspects of ceramics and glazes allowing students to develop competency and personal expression through the study and use of stoneware and porcelain clay bodies. A historical or technical paper is required. Materials fee. Prerequisite: 313. *Mr. C. Huisman.*

320 Introduction to Printmaking.* F. An introduction to the four basic printmaking media—relief, intaglio, serigraphy, and lithography—through slide presentations, lectures, readings, and demonstrations. Each student will choose one basic medium to explore during the semester. Materials fee. Prerequisite: 210. *Mr. C. S. Overvoorde.*

321 Intermediate Printmaking.* F. Continued exploration of the printmaking media with an emphasis on the development of visual ideas. The student may continue with the medium chosen during the first semester or experiment with another. Materials fee. Prerequisite: 320. *Mr. C. S. Overvoorde.*

322 Advanced Printmaking.* F. A further investigation of the printmaking media allowing students to develop the unique qualities of a particular medium or combination of media in relation to their own visual ideas. Materials fee. Prerequisite: 321. *Mr. C. S. Overvoorde.*

325 Introduction to Painting.* F and S. An introduction to the use of the paint medium, primarily using acrylic paints, emphasizing techniques, materials, and visual communication. The course includes a history of the media and of its technical development. Prerequisite: 210. *Staff.*

326 Intermediate Painting.* F and S. A further study of painting technique and its practice placing an emphasis on the relationship between concept and process. Students will study twentieth century art in relation to their own production. Prerequisite: 325. *Staff.*

327 Advanced Painting.* F and S. A continuation of 326 with a primary concern for developing each student's skills and individual approach to painting. Prerequisite: 326. *Staff.*

350 Introduction to Graphics.* S. An introduction to graphic design and reproduction involving layout, typography, the use of photography, and illustration. The course introduces the student to the various printing processes. Projects include posters, brochures, pamphlets, and advertisements. Prerequisite: 210 or permission of instructor. *Mr. C.S. Overvoorde.*

351 Intermediate Graphics.* S. A continuation of 350 with an emphasis on the production of illustrations and on the use of photography as they apply to specific problems of information and promotion. Prerequisite: 350. *Mr. C.S. Overvoorde.*

352 Advanced Graphics.* S. A continuation of 351 with a primary concern for developing each student's technical skills and individual approach in visual communication. Prerequisite: 351. *Mr. C.S. Overvoorde.*

360 Introduction to Photography.* F. An introduction to the basic techniques and processes of photography such as camera operation, black and white film processing, and printing. The history of photography and the various critical approaches to the medium form the context for the study of these techniques and processes. The medium is studied to discover individual development of expression and communication. Materials fee. Prerequisite: permission of the instructor; art majors must have completed 209. *Mr. R. Jensen.*

361 Intermediate Photography.* F. Continued exploration of the medium of photography in black and white with an emphasis on the development of an individual approach to photography. Basic color processes are introduced. Materials fee. Prerequisite: 360. *Mr. R. Jensen.*

362 Advanced Photography.* F. A continuation of 361 with a primary concern for developing each student's technical skills and individual approach in creative photography. Materials fee. Prerequisite: 361. *Mr. R. Jensen.*

390 Independent Study.* F, I, S. A student wishing to register for this course must submit a written proposal to the chairman for his approval. *Staff.*

395 Seminar and Exhibition.* S. 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.*

The following art courses may be part of supplementary concentrations in journalism:

- 350 **Introduction to Graphics.**
- 351 **Intermediate Graphics.**
- 360 **Introduction to Photography.**
- 362 **Intermediate Photography.**

ART HISTORY

231 An Introduction to the History of Art. 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, Mr. C. Young.*

232 An Introduction to the History of Art. S, core. Continuation of 231. The study of painting from 1500 to the present. *Mr. E. Boevé, Mr. C. Young.*

233 Medieval Art. * F, core. A study of the mosaics, frescoes, illuminated manuscripts, sculpture, and architecture of the Christian era from the Byzantine, Early Christian, Romanesque, and Gothic periods. Slide lectures and discussions; a research paper is required. Art history majors must complete 231 and 232 before taking this course. *Mr. E. Boevé.*

235 Renaissance Art. * Core. A study of the painting, architecture, and sculpture of the fifteenth and sixteenth centuries, with a focus on the Renaissance of Italy. The course presents an historical survey of the art produced in the centers at Florence, Rome, and Venice from the late Gothic period to the High Renaissance, followed by a study of the Mannerism of the sixteenth century. Not offered 1985-86.

236 History of Dutch Paintings. * S, core. An historical survey of Dutch and Flemish painting. The art produced in Antwerp, Haarlem, Leiden, Utrecht, Amsterdam,

Brussels, and Delft will be studied, tracing the rise and development of specialists in genre, religious, still-life, portrait, and landscape painting. Emphasis is on the works of the major masters of the time (formerly 332). *Mr. C.S. Overvoorde.*

237 Baroque Art History. * A study of the stylistic variations of seventeenth and eighteenth century painting, sculpture, and architecture in Western Europe. The influence on the visual arts of cultural changes in national politics, philosophy, and art training following the Reformation and Counter-Reformation will be addressed. Bernini, Caravaggio, Rubens, Velasquez, Rembrandt, Poussin, Watteau, Chardin, Reynolds, and Wren are among the major figures to be studied. A research paper is required. Not offered 1985-86.

238 Origins of Modern Art: Nineteenth Century. * F, core. A study of the sculpture, painting, and architecture of nineteenth century Europe with an emphasis on the artistic developments of Northern Europe. The course traces the successive stylistic movements of Neo-Classicism, Romanticism, Realism, Impressionism, Symbolism, and Expressionism as they emerge against the background of the official Academy of Art. *Mr. C. Young.*

240 History of Modern 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 Gaudi, and continuing into the twentieth century with Wright, Le Corbusier, Mies vander Rohe, and Saarinen. *Mr. E. Boevé.*

241 Oriental Art. * Core. A study of the sculpture, painting, and architecture of Asia Minor, India, Indo-China, China, and Japan. Major Buddhist and Islamic periods and styles are covered. Slide lectures and discussions; a research paper is required. Art history majors must complete 231 and 232 before taking this course. Not offered 1985-86.

The following classics course may be included in art concentrations.

CLAS.221 Graeco-Roman Art and Architecture. *Mr. K. Bratt.*

GRADUATE COURSES

580 **Workshop in Methods, Materials, and Research in the Fine Arts.** The course will attempt to show the interrelationships of the fine arts—art, music, speech—and to establish a curricular basis for the teaching of the fine arts from a Christian perspective. *Staff.*

590 **Independent Study** (graduate). F, I, S. *Staff.*

595 **Graduate Project.** F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

JANUARY 1986 INTERIM

W10 **Drawing Out the Muse.** This course introduces the basic media and techniques of drawing to the non-art major and provides a unique opportunity for the student to explore the potential of this visual language. Emphasis is placed on experimenting with a variety of drawing media (both conventional and non-conventional), pictorial composition and drawing styles. Students will be required to complete daily in-class drawing projects, daily out of class projects, participate in regular group discussion and critiques and do research into the history of drawing. Student cost of approximately \$20. *Mr. C. Overvoorde.*

W50 **Creative Casting.** This course is an intensive studio experience in casting methods and materials. Students will create several original sculptures, make molds, cast the forms in a second material, and clean up the castings for display. Castable materials to be used may include clay, plaster, concrete, polyester resins, bronze, aluminum, brass, and silver. Students will finish as many quality sculptures as possible while spending an average of seven hours per day in the studio. Studio time will be given to lecture/demonstrations, films, discussions, guest speakers, and critiques as well as individual projects. An additional hour per day will be spent on assigned readings or individual research. Evaluation will be accomplished by a check of a daily log students will keep on their studio, reading, and research activities and by individual and group critiques of sculptures produced. Approximate fee of \$25. Prerequisite: 210, 310,

or permission of the instructor. *Mr. C. Huisman.*

W51 **Collagraphy.** The word collagraph is a combination of the words collage and graphic, i. e., a printed collage. Collagraphy can be practiced with relief and intaglio methods of printmaking or a combination of the two. Introduction and the history of the collagraph are presented and discussed, although emphasis is placed and evaluation is based upon the production of collagraphic prints. Prerequisite: 210 or permission of the instructor. Student cost of approximately \$75. *Mrs. S. Bowden.*

W52 **Jewelry and Beyond.** This course aims to explore the role and functions of jewelry, and its three-dimensional design, technical and expressive qualities as sculpture. Class time will involve exploring metalsmithing techniques like forging, cold joining, soldering, and casting. Students will be required to make five pieces of jewelry, successfully pass written quizzes, and present a paper to the class on a historical or contemporary style in jewelry, or the philosophy of jewelry. Demonstration, slides, a guest lecturer, and a field trip are included. Students will be required to spend about eight hours a day on class work and pay a studio fee of approximately \$25. Prerequisite: 205 or permission of the instructor. *Mrs. H. Bonzelaar.*

W53 **An Adventure in Documentary Photography.** This course teaches the participants to observe, record, and comment on life through documentary photography. After studying its history and basic types, students will use documentary photography as a means to convey an idea or a message that sets it apart from an ordinary snapshot of a landscape, a group of friends, or a historic site. Students will use their cameras to express significant ideas about the world, life, faith, and experience, or a social condition that will make others think about the world and their life in a transformed way. The opportunity to learn about and create documentary photographs will be provided on campus the first week and during an organized bicycle tour the last three weeks along the gulf coast from New Orleans to Key West, Florida. This type of tour gives the students ample opportunity and time to observe, record, and comment with documentary photography while traveling through an area of their nation rich in

history, social significance, and various cultures. Fee of approximately \$400. Prerequisites: Permission of the instructor. Student's camera and bicycle must be approved by the instructor. *Mr. R. Jensen.*

W54 Anthropology and the Visual Arts. Anthropology is changing the way we look at the visual arts. Students will address the conceptual and practical issues crucial to art, art history, and anthropology of art through an examination of primitive to modern visual arts from various imagining and imagin-

ing activities. Special efforts are made to enable students to articulate a Christian approach to art practices both in the Christian community and in the general culture. Required readings, group discussion, a journal, and a student project presentation. Prerequisite: sophomore standing or above or permission of the instructor. *Mr. C. Young.*

IDIS W11 The Arts of England: Drama, Art, and Architecture. *Mr. E. Boevé, Mrs. E. Boevé.*

Astronomy

*Professors J. Van Zytveld (chairman, Department of Physics), H. Van Till
Associate Professor S. Haan*

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. Howard Van Till.

The physical science core requirement may be met by 110 or 201.

110 Planets, Stars, and Galaxies. F and S, 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. Laboratory. *Mr. S. Haan, Mr. H. Van Till.*

201 Contemporary Astronomy. F, core.

An introduction to modern astronomy and astrophysics for students concentrating in the area of science and mathematics. Major topics include the nature of stars and galaxies, the physical processes occurring in various celestial objects, and the current cosmological theories. Lectures, laboratory exercises, and observing projects. Prerequisites: Mathematics 161 and one course in college physics other than 110 or 112. *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 J. Beebe (chairman), H. Bouma, A. Bratt, A. Gebben, †B. Klooster, B. Ten Broek, P. Tigchelaar, G. Van Harn, U. Zylstra
Associate Professor D. De Heer
Assistant Professor R. Nyhof
Instructors R. Van Dragt, R. Van Enk

PREREQUISITE TO A PROGRAM of concentration in biology is a minimum average of C (2.0) in 131, 232, and 233 or approved equivalent courses .

The program of concentration is eight course units including 131, 232 (or 205–206), 233, 234, at least one investigative course, two additional 300-level courses, and 395. If 205–206 are included, 323 and 331 may not be included.

Required cognates include either one year of physics (221–222 or 126 and 225) or one year of mathematics (131–132 or 161–162), Chemistry 103–104 (or 113–114) plus a second year of chemistry (261–262 or 253–254) or a year of geology (151–152). Computer science is recommended. These cognates are minimum requirements. Students planning to do graduate work in cell and molecular biology are advised to complete both the physics and mathematics cognates and organic chemistry. Those planning careers in environmental biology should include the geology cognate and a course in statistics.

Prospective secondary teachers should complete the normal program of concentration with the addition of 361. Furthermore, one of the 300-level courses must be 311S, 341, 346, or 352. A minor in physical science is recommended and may be constituted of the cognates plus Geology 313. Education students are advised to complete the investigations course requirements (352, 353 or 354) during their junior year.

A secondary education teaching minor in biology consists of six course units: 131, 232, 233, 234, 361, and one from 311S, 341, 346, 352. Geology 151, 152, and 313 are desirable electives.

Directed teaching in biology is available only during the spring semester. The adviser for biology teaching major and minor programs and for the M.A.T. programs in science studies is Mr. Bernard Ten Broek. The adviser for elementary teacher science education programs is Mr. Clarence Menninga of the Department of Geology.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. These majors, however, normally are not appropriate for students planning to attend graduate school in biology. Group majors require a minimum of twelve courses in natural science and mathematics, ten of which must be from two disciplines with no fewer than four from either, with the remaining two cognates chosen from a third discipline. At least two 300

level courses in one discipline must be included in the ten course component of this group. The chairmen of the departments involved must approve each program.

The core requirement in biology is met by 111, 114, 115, 116, or 131.

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. Ecology, evolution, gene, and cell concepts are emphasized. Lectures and laboratories. Prerequisites: none, but Mathematics 100 and Physics 110 or equivalents are recommended. *Staff.*

113 Fundamentals of Soil Science. F. An introduction to soils from agricultural and ecological perspectives. Soil characteristics (texture, genesis, colloids, and plant nutrient composition) and soil classification information are presented as a basis for management and stewardship of soils. Lectures and laboratories. Prerequisites: one year of high school chemistry or equivalent. *Mr. A. Gebben.*

114 Plant Science. S. An introduction to the principles and concepts of plant science for the general college student who has an interest in agriculture. Topics include crop plant structure and function, the effects of environmental factors on growth development and reproduction, crop production, crop management, and plant propagation. Representatives of the major crop groups in world agriculture are surveyed including those of the tropics. Lectures and laboratories. Prerequisites: none, but Mathematics 100 and Physics 110 or equivalents are recommended. *Mr. J. Beebe.*

115 Human Biology. F and S. A study of topics selected from human physiology, anatomy, development, genetics, and evolution. The topics are presented so the student learns the current concepts and parts of their historical development, develops an understanding of the nature of biological science; and relates the information to health and other disciplines. The laboratory emphasizes human anatomy, but also includes some physiology exercises. Lectures and one three-hour laboratory each week. *Staff.*

116 Field Biology. F. The study of organisms in their natural environment. Empha-

sis is on concepts of ecology relevant to field biology, field and laboratory examination and identification of organisms, and the study of major ecosystems. Lectures and laboratory. Prerequisites: Mathematics 100 and Physics 110 or equivalents. *Mr. A. Bratt.*

205 Mammalian Anatomy. S. A study of the structure of mammalian organ systems, including some developmental anatomy and histology. The laboratory will include a dissection of a cat as a representative mammal and some study of histology. There will be special emphasis on human anatomy. Prerequisite: 131 or equivalent. *Staff.*

206 Mammalian Physiology. F. An introduction to the physiology of mammalian organisms. The function of the major systems is studied including circulation, respiration, excretion, muscle, nervous, and endocrine systems. The laboratory introduces basic physiological techniques. Prerequisites: 232 or 205, Chemistry 114, 253, or 261. *Mr. R. Nyhof.*

207 Introductory Microbiology. S. A study of the structure and function of microorganisms with emphasis on the bacteria. Three hours of lecture and two laboratory periods per week. Prerequisite: 131 and Chemistry 114 or 253 or equivalent. *Mr. R. Van Enk.*

264 Hematology. S. half course. A study of the components of blood and the blood-forming tissues. Course topics include blood cell morphology, development, hemostasis, plasma composition, and methods of blood analysis. Prerequisites: 232 or 206, Chemistry 114, 253, or 261. *Mr. H. Bouma.*

311S Field Botany. S. Taxonomy and ecology of vascular plants as components of natural communities. On site examination of plants in bogs, dunes, marshes, meadows, forests, and swamps. Assigned readings, field trips, and laboratory. Offered as a summer course at AuSable Trails Institute of Environmental Studies located near Manacelona, Michigan. Prerequisite: 201, 217, 233, or an introductory botany course. *Mr. A. Gebben.*

The following interdisciplinary course may be included in concentrations in this department:

IDIS 210 **History of Science.** *Staff.*

PROGRAM OF CONCENTRATION COURSES

Basic Courses

131 **Cell Biology and Genetics.** F. The structure and function of prokaryotic and eukaryotic cells are examined at the molecular, subcellular, and cellular levels. Fundamental concepts of genetics are studied including Mendelian genetics and some molecular genetics. The laboratory consists of basic techniques in cell and molecular biology plus some genetic exercises. *Staff.*

232 **Introduction to Zoology.** S. A study of the diversity, structure, and function of selected animals. Organism and organ-tissue levels of organization are emphasized. Lectures and laboratory. Prerequisite: 131. *Staff.*

233 **Introduction to Botany.** F. An introductory course in the structure and function of vascular plants and the diversity of plants. Topics include photosynthesis, movement of water and solutes, mineral nutrition, anatomy, and development of roots, stems, leaves, flowers, seeds, and diversity in the fungi, algae, bryophytes, ferns, fern allies, and seed plants. Prerequisite: 131. *Mr. J. Beebe.*

234 **Population and Community Biology** S. An introduction to the study of biological populations and communities and contemporary concepts of organic evolution. Lectures and laboratories. Prerequisites: 201 or 233 and 202 or 232, Chemistry 113 or 104. *Staff.*

Advanced Courses

Prerequisites for all advanced courses include at least three basic courses in the program of concentration.

321 **Genetics and Development.*** F. A study of modern concepts of the gene and the analysis of progressive acquisition of specialized structures and functions by organisms and their components. The laboratory includes study of genetic and developmental phenomena of selected organisms. Lectures and laboratory. Prerequisites: 202 or 232 and Chemistry 114, 253, or 261. *Mr. B. Ten Broek.*

323 **Comparative Vertebrate Anatomy.*** F. A study of the comparative anatomy of vertebrates. Credit cannot be applied toward a biology major for both 205 and 323. Prerequisite: 202 or 232. *Mr. P. Tigchelaar.*

331 **Comparative Animal Physiology.*** S. A comparative study of basic functional mechanisms of animals. Credit cannot be applied toward a biology major for both 206 and 331. Prerequisites: 202, 205 or 232; Chemistry 114, 253 or 261. *Mr. R. Nyhof.*

334 **Immunology.*** S, half course. An introduction to the study of immunology and serology. Course topics include innate, cellular, and humoral immunity, theories on the origin of antibody diversity, and the application of antigen-antibody specificity to serological assays. Prerequisites: 202, 206, or 232; Chemistry 114, 253, or 261. *Mr. D. De Heer.*

336 **General Microbiology.*** F. A study of the structure and function of microorganisms with emphasis on the bacteria. Prerequisites: 201 or 233, 202 or 232, or 206; Chemistry 114, 253, or 261. *Mr. R. Van Enk.*

341 **Entomology.*** F. Study of the biology of insects with emphasis on systematics. Lectures and laboratory. Prerequisite: 222 or 234. *Mr. A. Bratt.*

346 **Plant Taxonomy.*** S. Identification, nomenclature, and classification of vascular plants. Lectures, laboratories, and field trips. Prerequisite: 222 or 234. *Mr. A. Gebben.* Not offered in 1985-86.

Investigative Courses

Prerequisites for all investigative course include at least three basic courses in the program of concentration.

352 **Investigation in Physiological Ecology.*** S. Laboratory, greenhouse, and field studies in physiological ecology of plants and animals. Experiment design as well as the collection, analysis, and presentation of data will be emphasized. Topics include temperature regulation, energy exchange, water balance, and circadian rhythms. Prerequisites: 222 or 234, Chemistry 113 or 104. *Mr. J. Beebe, Mr. R. Van Dragt.*

353 **Investigations in Cell Biology.*** S. Laboratory studies with discussions of cellular, organelle, and molecular topics in cell biology including the techniques for preparing and observing materials for studies of

structure and function. Prerequisites: 201 or 233 and 202 or 232, Chemistry 114, 253 or 261. *Mr. D. De Heer, Mr. U. Zylstra.*

354 Investigations in Biology: Physiology of Behavior.* I. This course has two major objectives: to allow students to learn about the physiology of behavior using the investigative approach, and to give students experience in conducting a literature review, design of experiments, collecting and analyzing data, writing a research report, and giving an oral presentation. (See Interim, 1986 listings for further details.) Prerequisites: 202, 206 or permission of the instructors. *Mr. R. Nyhof, Mr. R. Van Dragt.*

Seminar and Research Courses

361 Teaching Investigation in Biology.* F. One half course. This course, intended for biology majors and for minors in the secondary education program, is designed to train students in the teaching of laboratory experiences in biology. The student intern will be involved in the observation, preparation, writing, and teaching of laboratory exercises. Prerequisites: 222, 234, or permission of the instructor. *Mr. B. Ten Broek.*

390 Independent Study. F, I, S. Prerequisite: approval of department.

395 Biological Perspectives.* F and 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.*

GRADUATE COURSES

510 Basic Ideas in Contemporary Biology. A study of contemporary ideas in biology involving all of the organizational levels (the molecular, cellular, organ, organism, population, species, community, ecosystem). The laboratory work will emphasize the methods of inquiry of biology especially as they pertain to the concepts of biology which are being taught in the elementary and junior high schools. Prerequisites: at least three courses in biology including 111 or 131. *Staff.*

590 Independent Study (graduate). F, I, S. *Staff.*

595 Graduate Project. F, I, S, full or half course. The prospectus for each Master of

Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

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W10 Plants and Civilization. Examination of the role of plants in the establishment and development of world centers of civilization as well as the medicinal, religious, and drug uses of plants through lectures, assigned readings, and reports. A term paper on a plant species or plant group which has had a significant role in human history is required. Non-science students are encouraged to pursue a topic which combines readings in both botanical literature and the literature of their own specialization. Although a background in botany is helpful, necessary botanical concepts and terminology are learned as the course progresses. Prerequisites: None. *Mr. A. Gebben.*

W50 Introduction to Plant Diseases And Pathogens. An introduction to plant diseases, with emphasis on diseases of plants grown in Michigan, caused by viruses, mycoplasmas, bacteria, fungi, and nematodes. Discussion of chemical and biological control, lectures, films, slides, and laboratory work, including study of aspects of pathogen life histories, identification of diseases and pathogens, and culture of certain pathogens. In addition to reserving time during the day for study of available materials in the laboratory, the student is required to report orally and in writing on a disease or diseases that attack a given plant. Quizzes and tests. Prerequisite: 201, 217, 233, or permission of the instructor. *Mr. J. Beebe.*

W51 Introduction to Parasitology. The study of parasitism as a type of symbiosis -- the close physiological relationship of different species. Emphasis is on host-parasite interactions, study of life cycles, parasite morphology, dissections, and identification of medically important parasites. Intended mainly for those interested in the health sciences. Lectures, films, and laboratory sessions. Evaluation is based on tests and laboratory work. Prerequisites: two courses in biology. *Mr. A. Bratt.*

W52 Embryos, Genes, and Evolution. The recent developments in the field of molecular genetics have made it possible to examine directly genes and gene expression during development. The rates of mor-

phological and molecular evolution appear to be noncongruent. Change in relative timing of developmental processes provides one of the best-documented mechanisms for achieving evolutionary changes in shape. The genetics of development have shown that genes control ontogeny and that there is a genetically determined developmental program. After discussing these topics, students will examine the arguments of the authors of our textbook, *Embryos, Genes, and Evolution*, for a synthetic integration of the developmental-genetic basis for morphological evolution. Students will use the textbook as a basis for discussion. In addition, students will be required to read and report on some of the relevant research papers in this area of investigation. Two take-home type tests are given. Prerequisites: 131, 201 or 233, 202 or 232, and 222 or permission of the instructor. *Mr. B. Ten Broek.*

W53 The Biology of Health. Without sufficient knowledge of the science of health, a person cannot adequately prevent disease or make full use of our health care system. This course attempts to educate the general college student in the basic facts of health. Some of the topics to be discussed are epidemiology and disease, drugs, tobacco and alcohol, accidents and health risks, nutrition, weight control, genetic diseases and counselling, ethics and the law, delivery of health care, and dilemmas in our health care system. The course includes outside speakers and films. Readings, a test, and a final examination. Prerequisite: one course in biology. *Mr. P. Tigchelaar*

W54 AIDS, Aging, and Cancer: The Immune System's Waning Defenses. This course is designed to acquaint the student with three conditions of contemporary interest often viewed as resulting from functional defects in the immune system. Lecture and discussion topics include the mechanism of antibody production, the function of T and B lymphocytes, immunoregulation, immune surveillance, and diagnosis. The research evidence underlying the present understanding of the conditions is emphasized as well as current treatment

techniques, especially those with ethical implications. Students will be evaluated on a short paper requiring literature searches and a final examination. Prerequisite: three courses in biology and one year of chemistry, or permission of the instructor. *Mr. D. DeHeer.*

W56 Electron Microscopy Techniques. The student will concentrate on fixation, embedding, and ultramicrotome techniques for the preparation of specimens suitable for electron microscopy, proper use of the electron microscope, darkroom techniques essential to photoelectron micrography, and the interpretation of electron micrographs. Course work includes a series of brief lectures, considerable hands-on experience, and an ultrastructure research project. Prerequisite: 201, 202, 232, or 233, Chemistry 253, 261, or 301, and the permission of the instructor. *Mr. U. Zylstra.*

354 Physiology of Behavior. This course has two major objectives: to allow students to learn about the physiology of behavior using the investigative approach, and to give students experience in conducting a literature review, design of experiments, collecting and analyzing data, writing a research report, and giving an oral presentation. Topic areas include: sensory discrimination, circadian rhythm analysis, pheromones, electrophysiological recording, neurosensory system examination, and individual research projects growing out of previously conducted experiments or applying previously developed techniques to other problems. For each topic area investigated, the experimental work is accompanied by the reading and discussion of appropriate selections in textbooks and the original literature. The students will keep a detailed record of their laboratory work and will submit written scientific papers on two of the formal laboratory investigations and on individual projects. This course satisfies the investigations requirement for biology majors. Prerequisites: 202, 206, 232, or permission of instructor. *Mr. R. VanDragt, Mr. R. Nyhof.*

Business and accounting

SEE THE DEPARTMENT OF ECONOMICS AND BUSINESS for a description of courses and programs of concentration in business and accounting.

Chemistry

*Professors R. Albers, R. Blankespoor, R. De Kock, *A. Leegwater, K. Piers (chairman), W. Van Doorne*

Associate Professor L. Louters

Assistant Professor T. Zwier

PREREQUISITE to a concentration in chemistry is a minimum average of C (2.0) in 104 and in one course from 201, 253, or 261.

The major program for students who do not plan to pursue graduate study in chemistry is 103, 104, 261, 262, 317, 318, 396, and one course from 201, 323, or 330. Required cognates are Mathematics 161, 162, 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 103, 104, 201, 261, 262, 317, 318, 329, 330, 396, and two from 323, 325, or 326; Mathematics 161, 162, 261, and 231 or 255; Physics 126 and 225 or 123, 124, and 225. A reading knowledge of German or French is strongly recommended. Computer Science 141 or 151 is recommended.

The nine-course chemistry major for teacher education students includes 103, 104, 201, 253–254 or 261–262, 304 or 317, 396, two courses in physics other than 110 or 112, and one chemistry course chosen from 318, 323, 325, 332, IDIS 210, or an approved interim course. The teaching minor is 103, 104, 253–254 or 261–262, 304, 396, and either a chemistry elective or an approved interim course.

The teaching group major in chemistry and physics consists of Chemistry 103–104 and 253–254 or 261–262; Physics 123, 124, 181, 182, 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, 317, 318, 396, Physics 380, and 382.

The adviser for elementary education programs in science is Mr. Clarence Menninga of the Geology Department; the adviser for secondary education sci-

ence concentrations is Mr. Paul Boonstra of the Mathematics Department. Students planning secondary majors or minors in chemistry should consult the chairman. Directed teaching in chemistry is available only during the spring semester.

The six-course minor concentration consists of 103, 104, 201, 253 or 261, 304 or 317, and one course from 254, 261, 318, 329, or an approved interim course.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. These majors are not appropriate for students who anticipate attending graduate school or who are in teacher education programs. Such group majors require twelve courses in the sciences and mathematics, ten of which must be from two departments with no fewer than four from either, with the remaining two courses chosen from a third department. The chairmen of the three departments involved must approve each program of this type.

The physical science core may be met by 110.

100 Preliminary College Chemistry. F. A special course in the introductory concepts of chemistry that is open only to students who have not studied chemistry previously or who have departmental permission. Students who successfully complete this course and 102, **Introductory Chemistry**, during the Interim may register for 104 during the spring semester. Laboratory. *Mr. L. Louters.*

102 Introductory Chemistry. I. A continuation of 100, including additional material needed to make the combination of 100 and this course equivalent to Chemistry 103. Laboratory. Prerequisite: successful completion of 100 or permission of the department. *Mr. L. Louters.*

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. Prerequisite: one year of high school chemistry or permission of the department. *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. Laboratory. Prerequisite: 103 or the equivalent. *Staff.*

110 Chemical Science. S, physical science core. A general course designed for the non-science student which explores the role of chemistry and its resulting technologies in contemporary society. The basic ideas, principles, and methodologies of

chemistry are discussed through an analysis of the stewardship of natural resources and the way these resources are used as synthetic materials and chemicals. Three lectures a week plus a laboratory. *Mr. A. Leegwater.*

113 Fundamentals of Chemistry. F. This course is the first of two required for the B.S.N. program. It also serves students in elementary education and certain paramedical programs needing a course in general chemistry. 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. Prerequisite: one year of high school chemistry or permission of the department. *Mr. R. De Kock.*

114 Introduction to Organic and Biochemistry. S, core. 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. *Staff.*

201 Quantitative Analysis. F. A study of the theory and practice of titrimetric and gravimetric methods of analysis. Laboratory. Prerequisite: 104. *Mr. W. Van Doorne.*

253 Organo-Biochemistry. F. A study of organic compounds, reactions, and reaction mechanisms, emphasizing their biochemical significance. Laboratory. Prerequisite: 104. *Mr. R. Blankespoor*

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. L. Louters.*

261 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. Prerequisites: 104. (Formerly 301) *Mr. K. Piers.*

262 Organic Chemistry. S. A continuation of 261. Laboratory. Prerequisite: 261. (Formerly 302) *Mr. R. Blankespoor, Mr. K. Piers.*

304 Physical Chemistry for the Biological Sciences. S. A one semester survey of physical chemistry with some applications to biological systems. This course treats the same topics covered in 317 and 318, but a knowledge of calculus is not required. Laboratory. Prerequisite: 104. (Formerly 204) Offered alternate years. *Mr. R. De Kock.*

317 Physical Chemistry. F. A study of chemical thermodynamics including an introduction to statistical mechanics; a study of the properties of gases; introduction to quantum mechanics and its application to simple models of translation, rotation and vibration in molecules. Laboratory. Prerequisites: 104, Mathematics 162, and a college physics course. (Formerly 277) *Mr. T. Zwier.*

318 Physical Chemistry. S. A study of the kinetics of chemical processes, molecular reaction dynamics, and electrochemistry. Laboratory consists of a study of experimental methods used in these areas and their application to analytical chemistry. Prerequisite: 317. (Formerly 278) *Mr. T. Zwier.*

323 Biochemistry.* F. A study of proteins, carbohydrates, lipids, enzymes, coenzymes, hormones, vitamins, metabolism, biosynthesis, and bioenergetics. Prerequisite: 254 or 262. (Formerly 303) *Mr. L. Louters.*

325 Advanced Organic Chemistry.* 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: 262 and 317. (Formerly 305) Offered alternate years. *Mr. R. Blankespoor.*

326 Quantum Chemistry.* S. An introduction to the principles of quantum mechanics, with special emphasis on their application to a variety of problems in atomic and molecular structure and reaction mechanisms. Prerequisites: 317, Physics 225, and one course in mathematics beyond 162. Computer Science 141 or 151 is recommended. (Formerly 306) Offered alternate years. *Mr. R. De Kock.*

329 Spectroscopy and Instrumental Methods of Analysis.* S. A study of modern experimental methods with particular emphases on spectroscopic techniques. Methods covered include microwave, infrared, and visible spectroscopies, laser techniques, electron spectroscopies, NMR, mass spectroscopy, diffraction methods, and chromatography. The course emphasizes both the theoretical aspects and their application to fundamental physical measurements and to analytical procedures. Prerequisite: 318 or concurrent registration. Laboratory. (Formerly 309) *Mr. T. Zwier.*

330 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: 318. (Formerly 310) *Mr. W. Van Doorne.*

390 Independent Study.* F, I, S. Directed readings or projects. Admission by permission of the chairman and instructor under whom the work will be done. *Staff.*

395 Research-Seminar. F, I, S, full or half course. Library and laboratory research on an assigned problem. In addition, each student will be required to present a seminar in the departmental seminar series. Open to juniors and seniors by permission of the chairman and instructor under whom the work will be done. *Staff.*

396 Perspectives in Chemistry. S, quarter course. Reflections on the discipline of chemistry: its history, methodology, philosophy, curricular structure, key ideas, and concepts; its role as a central science in

technology and society; the responsibilities of its practitioners in industry and in academic and research institutions. Prerequisite: junior or senior status in a chemistry program of concentration. *Mr. A. Leegwater.*

OFF-CAMPUS OFFERING

332 **Environmental Chemistry.** Principles and analysis of chemical movement and distribution in natural environments. Sampling and analytical methods are included for water, soil, and air. Work conducted both in natural habitats and the laboratory. Prerequisite: one year of general chemistry and one semester of either biochemistry or organic chemistry. Offered in conjunction with the Ausable Institute. See page 60.

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W50 **Fragrances and Flavors: The Chemistry of Taste and Smell.** This course involves the study of the chemistry of substances that generate tastes and odors in humans. Odor theory and classification form the background for the investigation of how chemical structure and shape affect the olfactory senses. Class lectures and laboratory projects. Prerequisite: 261 (301), or 253 or 114. *Mr. K. Piers*

102 **Introductory Chemistry.** A continuation of 100 including additional material needed to make the combination of 100 and this course equivalent to Chemistry 103. Laboratory. Prerequisite: successful completion of 100 or permission of the department. *Mr. L. Louters.*

Classical languages

Professors K. Bratt, G. Harris (chairman), R. Otten, R. Wevers

THE DEPARTMENT OFFERS FOUR PROGRAMS OF CONCENTRATION: in Classical Civilization, in Classical Languages, in the Greek language, and in the Latin language. The program in Classical Civilization or Classical Studies combines some study of one of the languages with a broad study in the culture and civilization of the Greeks and Romans and of the later influence of that culture. The Classical Languages program is designed for graduate studies, the Greek language program is for preseminarians and for any others wishing to concentrate in Greek language and literature, and the Latin language program is for those intending to teach the language at the secondary school level and for any others wishing to concentrate in Latin language and literature. Modified concentrations are available to other students.

Courses not normally scheduled may be offered to qualified students on an individual basis so that specific concentrations may be completed.

The Classical Civilization program consists of ten courses and one interim, all selected in consultation with a member of the department. The course requirements, besides the approved interim course, include: two courses, at the 200 level or above, in Greek language (one of which may be in New Testament Greek) or in Latin language; Classics 211, 221, 231; Philosophy 251; either Classics 311 and 312 or History 301 and 302; and two courses selected from: Art 231, History 201, History 302 (if not elected above), History 303, Philosophy 312,

Political Science 305, Religion 302, Religion 312, Communication 325, Communication 317, or additional courses (at 200 level or above) in the selected language.

The Classical Languages 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 culture and civilization courses selected from: Classics 211, 221, 231, 311, 312, History 301. Reading competence in French and German is strongly recommended.

The Greek language program requires six courses selected from: Greek 101–102, 201–202, 203–204, 205, 206, 301, 302; and two additional courses selected either from this group or from Classics 211, 221, 231, 311, 312, History 301. At least one course must be a 300-level Greek language course. The recommended preseminarian program is: Greek 101–102, 201–202 or 203–204, 205–206, History 301 or Classics 211, and a 300-level Greek language course.

The recommended Latin program, which prepares for a secondary teaching certificate, may include Latin 101–102, 201–202, 205–206, 301–302, 303–304 and three Classics courses or approved interim courses. The specific nine-course program depends on the student's high school preparation. Directed teaching is available only during the spring semester.

The Greek minor requires five language courses and one Classics course. Not more than one language course may be in New Testament Greek. The Latin minor, which also fulfills the minimum requirements for state teacher certification, requires five language courses beyond the 100-level and one Classics course. The specific courses for either the Greek or Latin minor should be chosen in consultation with a department member.

Students who have completed one year of high school Latin should enroll in Latin 101; two years in 201 (except that the unusually well qualified student, even with only two years of high school Latin, may with department approval enroll directly in Latin 205 and so meet the graduation requirement for language with one college course); those with 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, Classics 221, 231, and designated interims. The "foreign culture" requirement of certain designated pre-professional programs may be met by Classics 211. Classics 231, Classical Mythology, may be part of the teaching minor in the Academic Study of Religions.

CLASSICS

211 Graeco-Roman Culture. S. A survey of Graeco-Roman culture as reflected in various art forms, but with the main emphasis upon works of literature which express distinctive features of the mind of the Greeks and Romans. Slides, films, and other illustrative materials will be used, and students will be expected to read ex-

tensively in anthologies of Greek and Roman literature. No knowledge of Greek or Latin will be required. Satisfies the "foreign culture" option of certain preprofessional programs, and can be a substitute for ancient history in the seminary entrance requirements. *Mr. K. Bratt.*

221 Graeco-Roman Art and Architecture. F, core. A study of the major monuments

and sites of ancient Greek and Roman civilization from the Bronze Age to the late Empire. Primary attention is devoted to the origins and development of Greek sculpture, painting, and architecture, and to their transformation in the arts of Rome. Ancient literary sources supplement the study of physical remains in this investigation of Graeco-Roman culture. Slide lectures, written reports. *Mr. K. Bratt.*

231 **Classical Mythology.** F, core. A study of the major themes in Classical mythology via the literature and art of Greece and Rome. Major literary sources 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. Lectures, discussions, and written reports. *Mr. K. Bratt.*

311 **Greek History.*** F. The political, social, and cultural history of Ancient Greece from the Bronze Age to the beginnings of Christianity. Special attention is given to such problems as the emergence of the city-state, the civilization of the Periclean period, the great intellectual movements of the fourth century B.C., and the features of Hellenistic civilization which exerted a shaping influence on Roman society and early Christianity. This course may substitute for History 301. *Mr. G. Harris.* Not offered in 1985-86.

312 **Roman History.** * S. The history of Rome from the foundation of the city to A.D. 565, the death of Justinian. The emphasis is 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 are studied in their relation to the political. The decline of paganism and the rise of Christianity are viewed in their relation to each other. This course may substitute for History 301 in history concentrations. *Staff.* Not offered in 1985-86.

GREEK

101 **Elementary Greek.** F. A beginning study of classical Greek using Groten and Finn, *A Basic Course in Reading Attic Greek.* *Mr. K. Bratt, Mr. R. Wevers.*

102 **Elementary Greek.** S. Continuation of 101. Completion of the text and the reading of selected prose passages. *Staff.*

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. Not offered in 1985-86.

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. Not offered in 1985-86.

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. *Mr. R. Wevers.*

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. *Mr. R. Wevers.*

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 emphasized. Prerequisite: 102. *Mr. R. Otten.*

206 **New Testament Greek: The Epistles.** S. A study is made of some of the Pauline Epistles. Prerequisite: 205. *Mr. R. Otten.*

301 **Plato's Republic.*** S, core. The Greek text is studied. This course aims at an understanding and evaluation of Plato's views especially as presented in the *Republic*. Prerequisite: four courses in Greek or permission of instructor. *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.* Not offered 1985-86.

LATIN

101 **Elementary Latin.** F. For students who 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. G. Harris.*

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 years of high school Latin or two courses of college Latin. *Staff.*

202 Intermediate Latin. S, core. A study of the *Aeneid* and of selected poetry and prose in Latin. Prerequisite: three years of high school Latin or three courses of college Latin. *Staff.*

205 Latin of the Late Republic and Early Empire. F, core. Readings in the prose and poetry of the major writers, selected to survey the development of classical Latin literature and to serve as an introduction to the advanced genre courses. Prerequisite: 202, three years of high school Latin, or permission of the instructor. *Mr. R. Otten.*

206 Late Latin Literature. S, core. Readings in the prose and poetry of Latin literature from the Late Empire to the early Medieval period in both Christian and non-Christian authors. Prerequisite: 202, 205, or permission of the instructor. *Mr. R. Otten.*

301 Latin Epistolary Literature. F, core. Readings from the letters of Cicero and Pliny. The letters are read as social and political documentation for issues, movements, and conditions of the Late Republic and Early Empire and as commentaries on the careers and personalities of their authors. Prerequisite: 205 or 206. Offered in alternate years. *Mr. R. Wevers.*

302 Latin Philosophical Literature. S, core. Texts selected from such authors as Lucretius, Cicero, Seneca, Lactantius, and St. Augustine to illustrate the Latin contribution to Western culture, particularly in ethical and social thought. Prerequisite: 205 or 206. Offered in alternate years. *Mr. R. Otten.*

303 Latin Epic and Lyric Poetry. S, core. Selected readings from such authors as

Vergil, Catullus, Horace, and from the elegiac poets, with some attention to metrics and the Greek heritage in epic and lyric. Prerequisite: 205 or 206. Offered in alternate years. *Mr. K. Bratt.* Not offered in 1985-86.

304 Latin Historical Literature. S, core. Intensive reading in the major Roman historians of the Late Republic and Early Empire. Emphasis is placed upon the proper interpretation of these writers as sources for our understanding of the political movements of the period. Collateral reading and reports. Prerequisite: 205 or 206. Offered in alternate years. *Staff.* Not offered in 1985-86.

JANUARY 1986 INTERIM

W10 The Early Christian Church in Greece and Italy. A study of the foundation and growth of the Christian church in Greece and Italy during the first three centuries after Christ. This course assesses the value of extra-Biblical information (archeological, epigraphical, and literary) for an understanding of life in the earliest Christian communities in Europe. Among the specific topics to be considered are the following: the urban context of early Christianity (with special attention to Philippi, Corinth, and Rome), the sociology of the early church, early Christian art and architecture, the nature and extent of Roman persecution of the Christians, and the significance of the emperor Constantine in the history of the church. Lectures, discussions, reports, slides, films, and an examination. No prior knowledge of classical civilization is required. a reading list will be available in December. *Mr. K. Bratt.*

W50 Greek Review. This non-credit course offered during the January interim term is intended for all students who have completed Greek 101 and plan to continue in Greek 102. The course thoroughly reviews those matters of the Greek language studied in Greek 101, and so aims to ensure that students are as prepared for Greek 102, which begins without a review, as they were when they concluded Greek 101. No work outside of class is required, though optional exercises will be available. Since the course is non-credit, it is typically taken in addition to the student's regular interim class. This is possible since both a morning and an afternoon session are offered. Stu-

dents who are off campus and cannot enroll in the class should make special arrangement with their instructor. Prerequisite: 101. Mr. R. Wevers.

IDIS W55 **Christian Neo-Conservatism: Another Viewpoint on Politics, Economics, and Society.** Mr. G. Harris, Mr. H. Vander Goot.

Communication arts and sciences

Professors E. Boevé, A. Noteboom, M. Vande Guchte
Associate Professors R. Bytwerk, D. Holquist (chairman), J. Korf, Q. Schultze

PREREQUISITE TO A MAJOR is a minimum average of C (2.0) in two regular courses, one of which must be 100, 200, 203, 240, or 214. In addition to a general major, the department offers majors with emphases in theater, telecommunications, and teacher education. Not more than one course unit of 220 may be applied to a major.

The general major requires 200, 203, an interim course, 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 communications and rhetoric, cognate courses are chosen with the student's adviser.

Students wishing an emphasis in the theater program should take 200, 203, 217, 219, 317, an approved interim course, and three courses from 304, 318, 319, and 220. An approved 390 is also advised. •

Students wishing an emphasis in telecommunications—broadcasting, cable, and satellites—should take 150, 200 (or 100 and 110), 203 or 219, 230, 251, 252, at least two of the following: 253, 305, 325, an approved interim course, and an elective approved by the adviser. A joint theater/telecommunications emphasis consists of 200 (or 100 and 110), 203, 217, 219, 230, 251, 253 or 305, 317 or 318 (with the permission of the instructor), 319 or 325, and an approved interim.

The secondary school teaching major consists of 200, 203, 211, 217, 219, 230, 253, plus two and a half other courses. Directed teaching in communication arts and sciences is available only in the spring semester. The elementary school teaching major includes 203, 214, 215, 217, 219, 253, plus three other courses. The six-course secondary school teaching minor should include 200, 203, 211, 217, 219, 253, plus a half course elective. The elementary school minor is 203, 214, 215, 217, 253, and one elective. Only one course credit of 220 may be counted toward a concentration.

Students wishing an emphasis in communications disorders should take: 100 or 214, 110, 150, 203, 215, 216, 307, and 308. The requirements for a Bachelor of Science in Communication Disorders are given on page 63.

The supplementary concentration in journalism, a program involving the department, is described under the Department of English and may supplement majors in the department.

The core requirements in spoken rhetoric may be met by 100, 200; 214, if the student is in an elementary education program; 240; or by an examination, which presupposes formal and practical speech training in high school. The fine arts core requirement may be met by 203, 217, 253, 304, 317, 318, and 325.

COMMUNICATION AND RHETORIC

100 Fundamentals of Oral Rhetoric. F and S, half course, core. The primary aim of this course is to increase competence in oral communication. The major emphasis is on the composition and delivery of speeches. Students in elementary teacher education programs should take 214. *Staff.*

150 Introduction to Communication Theory. F. A survey of the ways human communication is understood. Theories from the humanities and social sciences are compared and evaluated. Topics considered include the ways in which communication, primarily language, influences our views of ourselves, others, the larger world, and God. *Mr. R. Bytwerk.*

200 Advanced Oral Rhetoric. F and S, core. Composition and presentation of types of speeches, participation in various types of discussion, readings in rhetorical theory, and criticism of selected contemporary speeches. Prerequisite: 100 or equivalent. *Mr. R. Bytwerk.*

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. *Staff.*

240 Group Communication. F and S, core. Small group communication theory and practice. Students analyze case studies and participate in group projects leading to class presentations. Topics include listening, discussion, argumentation, consensus, organization, decision-making, leadership, and persuasion. Standards for ethical conduct are considered throughout the course. *Mr. D. Holquist, Mr. Q. Schultze.*

325 History of Rhetorical Theory.* F, core. Major issues in the history of oral rhetoric and communication. Classical, me-

dieval, 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. Not offered 1985-86.

TELECOMMUNICATIONS

230 Mass Communication. F and S. An analysis of the major mass media institutions, including magazines, newspapers, radio, television, cable, and satellites. Topics include regulation, the economics of the media, social and cultural impacts, the role of advertising and public relations, and future developments. The media in the United States are compared with those of other nations, including Canada. This course is both for students interested in media-related professions and for students wishing to deepen their understanding of the operation and effects of the media. *Mr. Q. Schultze.*

251 Technical Aspects of Video. F. An introduction to the theory and practice of video program composition and production. Various program formats are discussed and evaluated in light of particular communication principles and needs. Students gain extensive experience with portable and stationary video cameras, recorders, switchers, and related technologies. Lighting, audio recording, and mixing principles are analyzed and demonstrated. Prerequisites: 150 and 230, or permission of the instructor. *Mr. J. Korf.*

252 Communication Ethics. The moral and ethical dimensions of human communication with special reference to mass communication. Comparisons are made of the major standards of conduct used to make judgments about appropriate communication behavior. Public vs. private

communication dilemmas are discussed. The various kinds of lies and rationalizations are analyzed. Responsibilities in mass communication practice, including public relations, reporting, advertising, and editorializing are discussed in the context of case studies. Prerequisites: Philosophy 205 or Religion 311, or consent of the instructor. Students who need to take this course for a graduation requirement may take English (W-53), Legal and Ethical Aspects of Journalism, as an alternative.

253 Television and the Contemporary Mind.* F, core. The study of various important cultural forms in television, including drama, news, and documentary. Students analyze the conventional television genres including situation and domestic comedies, anthology drama, westerns, detective shows, mysteries, soap operas, and adventure series. Course topics include: defining television art, the relationship between program content and social values, assumptions about human nature, and television's treatment of God and religion. *Mr. Q. Schultze.*

305 Persuasion and Propaganda.* S. The theory and practice of persuasive communication. Topics include theory and research in persuasion, improving personal persuasive abilities, recognizing and resisting persuasive strategies, and the role of propaganda in modern society. Examples for analysis are taken from advertising, religion, sales, political campaigns, and democratic totalitarian propoganda. *Mr. R. Bytwerk.*

SPEECH EDUCATION AND DISORDERS

110 Voice and Articulation. S, half course. The study and improvement of voice usage and articulation. The students are assisted in developing effective use of voice and articulation through evaluation, study, and practice. *Mr. M. Vande Guchte.*

214 Speech for the Elementary Teacher. F and S, core. Designed to familiarize the prospective teacher with the speech arts used in the elementary classroom and to increase competence in oral communication. Student presentations. *Mrs. E. Boevé, Mrs. A. Noteboom.*

215 Introduction to Communication Disorders. F. 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.*

216 Phonetics. F, half course. A study of phonetic theories and the use of International Phonetic Alphabet symbols in analyzing, categorizing, and transcribing the sounds of American English. The course emphasizes understanding of the processes involved in the production of specific phonemes. *Staff.*

307 Structures and Functions of the Speech Mechanisms. S. A study of the anatomy and physiology of the speech mechanisms, the involvement of the nervous system in the control of speech, and the acoustic characteristics of speech production. Prerequisite: 215 or permission of the instructor. *Mr. M. Vande Guchte.*

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: permission of instructor. *Mr. M. Vande Guchte.* Not offered 1985-86.

THEATER AND ORAL INTERPRETATION

203 Interpretive Reading. F and S, core. A study of the history, principles, and techniques of interpretation. Analysis and oral interpretation of prose and poetry. *Mr. D. Holquist, Mrs. A. Noteboom.*

217 An Introduction to the Theater. F, core. An introduction to the study of theater. Lectures focus on forms, genres, performance space, and the artistic principles of production. Selected readings, discussions, attendance at plays, and critiques of performances are required. *Mrs. E. Boevé.*

219 Principles of Dramatic Productions. S. A study of the theories and principles of acting and directing. Students will read plays, attend lectures and demonstrations, and be required to demonstrate their competence in acting and directing. Prerequisite: 217 or permission of the instructor. *Mr. J. Korf.* Not offered 1985-86.

220 Thespian Productions. Quarter course. Membership in the Thespian group

is limited and is determined annually by tryout. The members will be given training in the various practical aspects of the production of drama. Students may participate more than one year but not more than two course units of credit in Thespians and applied music may be applied to the minimum requirements for graduation. *Mr. J. Korf.*

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 1985-86.

317 History of Theater and Drama. * S, core. A historical and analytical study of theater and drama from its origins to the eighteenth century. *Mrs. E. Boevé.* Not offered in 1985-86

318 History of Theater and Drama. * S, core. A continuation of 317. A historical and analytical study of theater and drama from the eighteenth century to the present. *Mrs. E. Boevé.*

319 Design for Theater. S. A study of the theories and principles of theater design. This course builds on the principles taught in 219 and includes lectures, demonstrations, reading of plays, and the development of competence in set, light, costume, make-up, property, and publicity design. Prerequisites: 217, 219, or permission of instructor. *Mr. J. Korf.* Not offered in 1985-86.

390 Independent Study. 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 1986 INTERIM

W10 Children's Theater: Philosophy and Method. This course deals with the practical differences between plays for children and plays for adults and will focus on the growth, opportunities, and purpose of children's theater today. It will develop a general set of principles that govern what children's should be. In addition students will

be guided through the major phases of production and will participate in the producing of J.R.R. Tolkien's *The Hobbit*. Lectures, reading of assigned articles and plays, tests, and participation in the production of the play. *Mr. J. Korf.*

W11 Fundamentals of Cross Cultural Communication. This is a multi-ethnic course inductively taught to discover the fundamentals necessary for effective cross cultural communication in our pluralistic society and world. Through a variety of ethnic activities and cross cultural experiences, both in and out of class, students will learn how to minimize ethnocentrism and stereotyping and how to facilitate and enhance mutual understanding, appreciation, and communication skills, developing truly intercultural communication skills. A text, short paper, several open-book tests. The primary focus will be on classroom dialogue, game-playing, and multi-ethnic experiences. *Mr. Abraham Davis.*

W50 Growing up in America: The Wit and Wisdom of Jean Shepherd. Shepherd is one of America's foremost humorists. His work has spanned all of the major media, including radio, television, magazines, newspapers, film, and stage. He has won numerous awards for his short stories and has been cited for outstanding contributions by the TV Critics Circle and the Film Critics Association. His work is concerned with what it is like to grow up in modern, secular society, and he approaches the subject with refreshing honesty and humorous insight. Students will listen to several of his radio shows; view two of his PBS programs as well as his film, *A Christmas Story*; and will read several of his novels. Students must participate in class discussions and write two short papers. Prerequisite: sophomore status or above. *Mr. Q. Schultze, Mr. D. Holquist*

W51 Speech and Hearing Rehabilitation. An exploration of the profession which deals with the treatment of speech and hearing disorders. Students will study the beginning and growth of this professional field, and the ethical, political, and social issues the profession has and continues to encounter. Training programs for speech-language pathologists and audiologists are examined, followed by direct contacts with practicing professionals in various settings. Class lectures and discussions are supple-

mented by guest lectures, and by field trips to such settings as Mary Free Bed Rehabilitation Center, Hearing and Speech Center of Grand Rapids, Michigan State University, and Elim Christian School. Recommended for students wishing to gain more information about this profession, and for students entering various areas of special education, psychology, or so-

ciology. Readings in professional texts and journals; oral and written reports. Travel fee of approximately \$30. Psychology and/or CAS 215 provide helpful background. *Mr. M. Vande Guchte.*

IDIS W11 The Arts of England: Drama, Art, and Architecture. *Mr. E. Boevé, Mrs. E. Boevé.*

Computer science

*Professors. D. Brink, T. Jager (chairman, Department of Mathematics and Computer Science), D. Laverell, S. Leestma, **L. Nyhoff, G. Venema*
Associate Professor M. Stob
Assistant Professor V. Nyhoff
Instructors G. Lanning, P. Prins, W. Westmaas

THE COMPUTER SCIENCE OFFERINGS of the Department of Mathematics and Computer Science fall into three categories: a general introduction to computers and computing for the general college student (Computer Science 100); programming courses for students who plan to use the computer in their disciplines; and courses in theoretical computer science for the specialist.

A major program of concentration in computer science consists of 151, 152, 243, 392, and five additional courses selected from Mathematics 243, 343, Computer Science 251, 252, 285, 335, 350, 360, 370, 385, or an approved interim. The required mathematics cognate for the major program is 151, 161, 162, and 255. Computer Science 141 and Mathematics 261 are recommended. A minimum grade of C (2.0) in a 200-level computer science course is required for admission to a major program of concentration. A minor consists of 151, 152, 243, and three courses selected from Mathematics 243, 343, Computer Science 251, 252, 285, 335, 350, 360, 370, 385, or an approved interim. Mathematics 151 is a required cognate. Group concentrations involving mathematics, business, and other departments are available.

100 Introduction to Computing. F and S. Intended for the student with no computer experience who desires to obtain a general knowledge of computers. An overview of what computers are, how they are used, and the role of computers in modern society. Students will learn elementary programming using BASIC. *Mr. G. Lanning.*

121 Introduction to Business Computing. F and S. An overview of computer informa-

tion systems. This survey course introduces computer hardware, software, procedures, and systems and their applications in business. The fundamentals of computer problem solving and programming in a high level language (BASIC) are discussed and applied. *Staff.*

131 Introduction to Computing for Business. F and S. An introduction to problem-solving methods and algorithm develop-

ment, the design, coding, debugging, testing, and documentation of programs using techniques of good programming style. Structured programming using COBOL is emphasized. Applications are taken from business data processing. Prerequisite: two years of high school mathematics. *Mr. W. Westmaas.*

141 Introduction to Computing with FORTRAN. F and S, half course. An introduction to computer programming using FORTRAN-77. Emphasis is on learning the language with consideration of problem-solving methods and algorithm development as time permits. Prerequisite: Mathematics 132 or 161, which may be taken concurrently. *Mr. D. Laverell.*

151 Computer Programming I. F and S, honors section. An introduction to problem solving methods and algorithm development, the design, coding, debugging, testing, and documentation of programs using techniques of good programming style. Structured programming using the Pascal language will be emphasized. Prerequisite: two years of high school algebra, or permission of instructor, and for majors and minors in computer science, concurrent enrollment in Mathematics 151. *Staff.*

152 Computer Programming II. F and S. Continuation of 151. Advanced programming features and their implementation in Pascal. Introduction to elementary data structures. Continued emphasis on structured programming. Consideration of a second programming language (PL/I) as time permits. Prerequisite: Mathematics 151 and Computer Science 151. *Mr. P. Prins.*

243 Computer Organization and Assembly Language Programming. F and S. A study of the structure and organization of the basic components of a computer system. Topics covered include binary representation of data, arithmetic and logical operations, principal machine instruction types and their formats, addressing schemes, and assembly language programming. Prerequisite: 152. *Mr. S. Leestma.*

251 Discrete Structures. F. An introduction to various discrete mathematical structures. Topics include sets and binary relations, graphs, algebraic structures, lattices, and Boolean algebras. Combinatorics, algorithms, and abstract computers (Turing machines) are also considered. Also listed

as Mathematics 251. Prerequisites: a programming course and Mathematics 132 or 161. *Mr. L. Nyhoff.*

252 Data Structures. S. An analysis of structures for storing data and of algorithms for manipulating these structures. Data structures studied include lists, stacks, queues, and trees. Various algorithms for sorting, searching, and updating these structures are developed and analyzed. Prerequisites: 152, 251, or permission of instructor. *Staff.*

285 Introduction to Digital Electronics. F. An introduction to digital electronics for students with little or no background in physics or electronics. Topics include: basic circuit elements and laboratory instruments, discrete circuits for digital functions, Boolean algebra for circuit design, logic circuit analysis and design, and integrated circuits. Not intended for students who have taken or plan to take Physics 380 or Engineering 208 or 308. Laboratory. Also listed as Physics 285. Prerequisite: Mathematics 132 or 161. *Mr. J. Van Zytveld.*

335 Numerical Analysis. * S. Analysis of errors in numerical methods, real roots of equations, approximations using polynomials, numerical integration, applications to differential equations, Lagrange and spline interpolation, least squares approximations, orthogonal polynomials and applications. Also listed as Mathematics 335. Prerequisites: 141 or 151 and Mathematics 255 or permission of instructor. *Staff.*

350 Operating Systems. F. An introduction to the major concepts of operating systems. Topics covered include dynamic procedure activation, system structure, memory management, correctness, timing, and process management, including concurrent programming constructs. Prerequisites: 243 and 252. *Mr. L. Nyhoff.*

360 Database Management Systems. F. An introduction to the structures necessary to implement a database management system. Topics include data models (including hierarchical, network, and relational data models), normal forms for data relations, data description languages, query facilities. An introduction to existing data base management systems is given. Prerequisite: 252. *Mr. P. Prins.*

370 Language Structures and Compiler Design. * S. An introduction to the basic

constructs of modern programming languages and to the techniques for implementing these in the machine language of a typical computer. Topics include grammatical structure, syntax, semantics, parsing, storage allocation, error detection, and object code generation. Prerequisites: 243 and 252. *Staff.*

385 Introduction to Microprocessors. * S. An introduction to microprocessors, including the following topics: technology of microprocessor development, microprocessor architecture, programming, systems design, interfacing, and peripherals. Laboratory. Also listed as Physics 385. Prerequisite: 285 or its equivalent and programming experience. *Mr. J. Van Zytveld.*

390 Independent Study. F, I, S. *Staff.*

392 Perspectives on Computing. * F and S, half course. A senior-level seminar course. Discussion of special topics in computer science. Special emphasis on computer applications, social implications, ethical and legal issues, future social impact. Prerequisite: senior status in computer science program of concentration. *Staff.*

395 Senior Thesis in Computer Science. F, I, and S. The course requirements include an expository or research paper and an oral presentation on a selected topic in computer science. Open to qualified students with the permission of the chairman. *Staff.*

JANUARY 1986 INTERIM

W51 Computers and Calculators in Elementary School Mathematics. An examination of the role of microcomputers and calculators in current elementary school mathematics and the potential impact of this technology on future mathematics curricula. Among the issues addressed are: the relationship of calculator usage to arithmetic skill acquisition, conceptual development, and problem solving; the effectiveness of computer-based instructional approaches in achieving a variety of educational goals; the appropriateness of computer programming for elementary school students; evaluation and use of commercial educational software; and technology as an impetus for curricular change. No previous experience with microcomputers is required. The course includes an introduction to computers and programming. Op-

portunity for extensive hands-on experience is provided. Students will be expected to present oral reports on selected course readings and to complete several short projects related to the issues addressed. Prerequisite: Mathematics 121 or permission of the instructor. *Mr. G. Talsma.*

W54 Introduction to Artificial Intelligence. An overview of Artificial Intelligence including learning the LISP programming language. The topics covered include knowledge representation, searching, pattern matching, expert systems, augmented transition networks, and natural language interfaces. FRAMES, object-oriented language, robotics, and current research is discussed if time permits. Students will write programs and take a final examination. Prerequisite: 252 or permission of the instructor. *Mr. P. Prins.*

W55 Computer-Generated Imagery. Over the last few years computer-generated images and the underlying mathematics has received a great deal of attention. Many aspects of this sub-discipline of computer science are changing with each passing year. This is due largely to the explosive growth and popular interest in personal computers. In this course the mathematics required for the development of general-purpose and special-purpose graphics software is introduced. Any object in space can be represented by some elementary set of points: vertices, edges, and/or related simple surface elements. A variety of linear transformations are studied which operate on these sets to yield the desired perspective and projection of the computer-generated image, including the appropriate rotation, translation, and/or scaling. Homogeneous coordinates are the crucial framework for algorithm development. Splines are also presented and the quaternion is introduced as an efficient alternative to conventional rotation matrices. A primary objective in this course is to provide an environment for individual creativity. Each participant must be proficient in at least one resident language: all will declare at least one graphics project and write the software for a final show-n-tell. A field trip to an outside world graphics application scene is planned. Prerequisite: At least one course unit in computer science and either Mathematics 255 or 266 or permission of the instructor. *Mr. J. Kuipers.*

Dutch

Professor B. Carvill (chairman, Department of Germanic Languages)
Associate Professor M. Bakker (program coordinator)

PREREQUISITE TO A 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 one. 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. *Staff.*

102 Elementary Dutch. S. Continuation of 101. *Staff.*

201 Intermediate Dutch. F. Selected readings of modern Dutch prose and poetry. Review of grammar and syntax. *Staff.*

202 Intermediate Dutch. S. Continuation of 201. *Mr. M. Bakker.*

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

204 Intermediate Dutch. S. A continuation of 203. *Mr. M. Bakker.*

305 Dutch Classics.* Core. Study and discussion of several Dutch literary texts representative of the classical and modern periods of Dutch literature. Because the lit-

erature studied is varied from year to year, the course may be repeated for credit. *Mr. M. Bakker.*

306 Dutch Classics.* Core. A continuation of 305. *Mr. M. Bakker.*

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. *Mr. M. Bakker.*

308 Readings in Dutch Church History.* S. A continuation of 307 for the period 1700-1945. *Mr. M. Bakker.*

309 Netherlandic Civilization.* A study conducted in the English language of several important aspects of Netherlandic civilization: language, literature, history, religion, art, architecture, social structure, and education. Readings in English. Students reading in Dutch may apply this course to a Dutch concentration. *Mr. M. Bakker.*

390 Independent Study. F, I, S. *Staff.*

Economics and business

Professors E. Dykema (chairman), G. Monsma, D. Pruis, J. Tiemstra
Associate Professors L. De Lange, J. Dodge, K. Kuipers, R. Slager, E. Vander Der Heide
Assistant Professors J. Brothers, D. Cook, D. House, M. McGervey, S. Roels
Instructor R. Hoksbergen, S. Vanderlinde

THE DEPARTMENT OFFERS four majors leading to a Bachelor of Arts degree—business, economics, a group concentration in the social sciences, and a group concentration involving mathematics and economics or business—as well as a program leading to a Bachelor of Science in Accountancy. The department also offers minors in business, in economics, and teacher education majors and minors. Prerequisite to admission to any major is a grade of C (2.0) in Economics 151 or 221.

The business major requires Business 201, 202, 360, 370, 380, four courses in economics, one departmental elective, the mathematics cognate, and a cognate in computer science.

The B.S. in Accountancy requires Business 201, 202, 301, 302, 305, 350, 360, 370, 380, three courses from Business 306, 310, 311, and 315, four courses in economics, the mathematics cognate, and the computer science cognate. Business 319 is a recommended elective. Students wishing to meet C.P.A. requirements should consult with an accounting faculty member.

For both the business major and the B.S. in Accountancy, the four-course requirement in economics is typically met by completing Economics 221, 222; one course from Economics 323–324 or Business 325–326; and one additional course from Economics 323–326, 331–339 or an approved interim course. Students who began by taking Economics 151 must continue with two courses from the 323–326 group and one additional course from Economics 331–339.

The economics major requires Economics 221, 222, 323, 324, 395, three from 331–345, two other departmental courses, and the mathematics cognate. Students who have taken Economics 151 should continue with 323, 324, four from 331–345, 395, two other departmental courses, and the mathematics cognate. Teacher certification in economics requires one less departmental elective.

The social science group major may have either a business or an economics emphasis. The business emphasis requires Business 201, 360, Economics 221, 222, three additional departmental courses, and four courses from another social science. Students who begin with 151 must take one additional economics course from 323–326. The economics emphasis requires Economics 221, 222, 323 or 324, two more from 325–345, two additional departmental courses, and four courses from another social science. Students who take 151 must continue with both 323 and 324 and with two from 331–345. The four social science courses must be in history, political science, psychology, or sociology in a coordinated program approved by the department.

The mathematics and economics or business group major may have either a business or economics emphasis. The business emphasis requires Business 201, 202, Economics 221, 222, two additional departmental courses, Mathematics 161, 162, 255, 261, 343, and 344, and the computer science cognate. The economics emphasis requires Economics 221, 222, one from 323–326, three other departmental courses, and Mathematics 161, 162, 255, 261, 343, 344, and the computer science cognate. Variations should be approved by a departmental adviser.

The business minor requires Business 201, 360, Economics 221, 222, and two other business courses (or Economics 151 and three other business courses). The economics minor requires Economics 221, 222, either 323 or 324 (or Economics 151 and both 323 and 324), and three courses from Business 201 and Economics 331–345. Teacher certification in an economics minor requires Economics 221, 222 (or

Economics 151 and 323 or 324), and four courses from Business 201 and Economics 323-345 including up to two approved interims.

The minimum mathematics cognate is 131 and 132; an alternative is 161, 162, 243. However 161, 162, 255, 261, 343, and 344 are recommended mathematics courses. Although the computer science cognate can be met by any course in computer science, Computer Science 100, 121, or 131 is recommended. One approved interim course may be included in any program of concentration. The core requirement in the social sciences is met by Economics 151 or, normally for students majoring in economics or business, 221. However, only one of the courses may be counted toward a departmental major or minor.

BUSINESS

201 Introduction to Financial Accounting. F. An introduction to accounting with emphasis on principles of asset valuation and income determination. Prerequisite: completion of or concurrent registration in 151 or 221. Not open to freshmen. (Previously 207) *Mr. L. De Lange, Mr. D. Pruis, Mr. R. Slager, Mr. R. Vander Weele.*

202 Financial and Managerial Accounting. S. A continuation of 201 emphasizing consolidated financial statements. The course provides an introduction to cost accounting, budgeting, the development of controls, and the use of financial analysis for managerial decision-making. Prerequisite: 201. (Previously 212) *Mr. L. De Lange, Mr. D. Pruis, Mr. R. Slager.*

301 Intermediate Accounting I.* F. A study of financial accounting theory and generally accepted accounting principles as applied to the measurement and valuation of assets and liabilities. Prerequisite: 202. (Previously 307) *Mr. K. Kuipers.*

302 Intermediate Accounting II.* S. Continuation of 301. A study of financial accounting theory and generally accepted accounting principles as applied to the measurement and valuation of stockholders' equity, issues related to income determination, and preparation and analysis of corporate financial statements. Prerequisite: 301. (Previously 308) *Mr. K. Kuipers.*

305 Cost Accounting.* F and S. 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: 202. (Previously 312) *Mr. J. Mellema.*

306 Income Tax.* F. A study of Federal income tax law and of tax cases to provide a

basis for an understanding and evaluation of that law and of the rate structure. Includes the implications of income taxation for business decisions. Emphasis on taxation of individuals with limited coverage of partnerships and corporations. Prerequisite: 201. (Previously 209) *Mr. L. De Lange.*

310 Advanced Accounting.* F. Preparation of consolidated financial statements, accounting for partnerships, and accounting for installment and consignment sales. Introduction to governmental and fund accounting. Prerequisite: completion of or concurrent registration in 301. *Mr. D. Pruis.*

311 Auditing.* F. The theory and philosophy of auditing, including an examination of the ethical and other professional standards required of the Certified Public Accountant. Prerequisite: completion of or concurrent registration in 301. *Mr. K. Kuipers.*

315 Accounting Systems.* F and S. A study of accounting systems and their design including procedures, cycle flow, internal controls, and tools of systems analysis. Emphasis is placed on systems analysis techniques and design for manual and computerized systems. Prerequisite: 202 and one course in computer science. *Mr. R. Slager.*

319 Topics in Public Accounting.* S. Studies in selected areas of CPA practice which are often covered in the Uniform CPA Examination: fund accounting for governmental and not-for-profit entities; advanced taxation including taxation of corporations, partnerships, estates, trusts, and gifts; law of accountancy and other selected business law topics. Prerequisites: 306, 310, 350. *Mr. L. De Lange and Mr. D. Pruis.*

325 Managerial Economics.* F. An intermediate level course in microeconomic the-

ory emphasizing applications to managerial decision-making in the areas of production, marketing, and hiring of resources. Goals of firms and the use of economic theory in achieving them will be examined and evaluated. Also listed as Economics 325. Students may not receive credit for both this course and Economics 323. Prerequisites: Economics 151 or 221, Mathematics 132 or 161, and completion of or concurrent registration in Mathematics 131, 243, or 343. *Mr. J. Dodge.*

326 Business Cycles and Forecasting.* F. An intermediate level course in macroeconomic theory emphasizing analysis of general business activity and the implications of changing business conditions for business and public policy. Basic forecasting techniques are explained and the use of forecast information in firm and individual decision-making is evaluated. Also listed as Economics 326. Students may not receive credit for both this course and Economics 324. Prerequisites: Economics 151 or 222 and completion of or concurrent registration in Mathematics 131, 243, or 343. *Mr. E. Van Der Heide.*

350 Law in Business.* F and S. 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. (Previously 309) *Mr. D. Buter, Mr. T. Waalkes.*

358 Business Aspects for Engineers. F. An overview of the aspects of business important to engineering. Selected topics from economics, accounting, finance, marketing, management, and business law are included. Prerequisite: 151 and junior or senior standing in the engineering program. *Mrs. S. Roels.*

359 Internship in Business. F and S. These internships involve ten to fifteen hours of work a week under an employer supervisor and a series of internship seminars on campus. Placements may be in businesses or in not-for-profit organizations. Each intern, after consultation with the internship coordinator, will submit either an analytical journal or a research paper and a short personal evaluation of the internship. Prerequisites: three courses in business or economics, junior or senior standing, and

permission of the internship coordinator. *Mrs. S. Roels.*

360 Business Organization and Management.* F and S. A study of the principles and problems of organizing and managing the firm, with emphasis on organization goals, structure, and the effective use of human resources. Not open to freshmen. (Previously 313) *Mr. D. House, Mr. M. McGervey.*

365 Personnel Management.* F and S. A study of the principles and problems involved in personnel management in an organization, including recruitment, selection, training, evaluation, motivation, compensation, human resource planning, career development, and collective bargaining. Prerequisite: 360 or permission of the instructor. (Previously 314) *Mr. D. House.*

370 Financial Principles.* F and S. A study of the principles and problems of the financial management of the firm, including such topics as stock and bond valuation, working capital management, cost of capital and capital budgeting, capital structure, and dividend policy. Prerequisites: 151 or 221 and 201. (Previously 316) *Mr. R. Vander Weele.*

371 Financial Instruments and Markets.* S. An extension of 370 into topics such as leasing, mergers, and multinational finance; application of the theory of finance to investment instruments, including stocks, bonds, options, futures markets, and commodities, and to financial markets and institutions, including investment companies and the stock exchanges. Prerequisite: 370. (Previously 317) *Mr. K. Kuipers.*

380 Marketing.* F and 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 or 221. Not open to freshmen. (Previously 318) *Mr. M. McGervey, Mr. J. Brothers.*

381 Advanced Topics in Marketing.* F. This course deals with topics involving consumer behavior, the market research process, sales management, advertising, and marketing strategy. Prerequisite: 380. *Mr. J. Brothers.*

390 Independent Study. F, I, S. Prerequisite: permission of the chairman.

396 **Business Policy Seminar.*** S. An integrative study of business goals, strategies, and administration. Case studies, readings, reports, and a management simulation. Open to senior business majors. *Mr. R. Vander Weele.*

590 **Independant Study.** F, I, S. Prerequisite: permission of the chairman. *Staff*

ECONOMICS

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. *Mr. J. Dodge, Mr. E. Dykema, Mr. R. Hoksbergen, Mr. G. Monsma, Mr. E. Van Der Heide, Mr. S. Vanderlinde.*

221 **Principles of Microeconomics.** F and S, core. A study of the behavior of consumers and firms and their effects on prices, production of goods and services, use of resources, and the distribution of income; with an evaluation of the equity and efficiency of private sector and governmental activity in a market system. *Mr. G. Monsma, Mr. J. Tiemstra. Mr. S. Vanderlinde.*

222 **Principles of Macroeconomics.** F and S. A continuation of 221. A study and evaluation of the determination of national income including analysis of consumer spending and saving patterns; business investment; government spending, taxation, and monetary policy; unemployment; and inflation. Prerequisite: 221. *Mr. R. Hoksbergen, Mr. J. Tiemstra, Mr. E. Van Der Heide.*

323 **Intermediate Microeconomics.*** F and 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. Students may not receive credit for both this course and Economics or Business 325. Prerequisite: 151 or 221. (Previously 322) *Mr. G. Monsma.*

324 **Intermediate Macroeconomics.*** S. 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. Students may not receive credit for

both this course and Economics or Business 326. Prerequisite: 151 or 222. (Previously 321) *Mr. S. Vanderlinde.*

325 **Managerial Economics.*** F. An intermediate level course in microeconomic theory emphasizing applications to managerial decision-making in the areas of production, marketing, and hiring of resources. Goals of firms and the use of economic theory in achieving them are examined and evaluated. Also listed as Business 325. Students may not receive credit for both this course and Economics 323. Prerequisites: Economics 151 or 221, Mathematics 132 or 161, and completion of or concurrent registration in Mathematics 131, 243, or 343. *Mr. J. Dodge.*

326 **Business Cycles and Forecasting.*** F. An intermediate level course in macroeconomic theory emphasizing analysis of general business activity and the implications of changing business conditions for business and public policy. Basic forecasting techniques are explained and the use of forecast information in firm and individual decision-making are evaluated. Also listed as Business 326. Students may not receive credit for both this course and Economics 324. Prerequisites: Economics 151 or 222, and completion of or concurrent registration in Mathematics 131, 243, or 343. *Mr. E. Van Der Heide.*

331 **Money and Banking.*** 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 or 222. *Mr. J. Dodge.*

332 **Environmental Economics and Public Policy.*** F. An introduction to the theory and practice of environmental policy. The course provides a survey of the problems considered by environmental economics and an evaluation of the policies that have been developed—problems related to pollution and other forms of environmental deterioration, to the use of energy and other resources, and to related issues. Prerequisite: 151 or 221, or permission of instructor. (Previously 232) *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 or 221. *Mr. J. Tiemstra.*

335 **Labor Economics.*** S. A study of labor markets and their relationship to the economy as a whole, with an emphasis on wage theory, the impact of trade unions, unemployment, income distribution, human capital formation, labor force participation, and public policies concerning such topics. Prerequisite: 151 or 221. *Mr. G. Monsma.* Not offered in 1985-86.

336 **Comparative Economic Systems.*** A comparison of various forms of economic organization, such as capitalist and socialist types, and an evaluation of their performance in theory and practice. Prerequisite: 151 or 221. *Staff.*

337 **World Poverty and Economic Development.*** F. A study of the causes of widespread poverty in many nations and regions of the world, and a study and evaluation of policies designed for its alleviation. Prerequisite: 151 or 221. *Mr. E. Dykema.*

338 **International Economics.*** F. 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 or 222. *Mr. R. Hoksbergen.*

339 **Public Finance.*** S. The effects of government spending and taxation on resource allocation and on the distribution of income. Students will consider current policy issues and will analyze major programs at the national, state, and local level. Prerequisite: 151 or 221. *Mr. E. Van Der Heide.*

345 **History of Economic Thought.*** S. An examination of the development of economic ideas with an emphasis on the emergence of main historical themes, issues, and controversies. Prerequisite: 151 or permission of the instructor. (Previously 342). *Mr. E. Dykema.* Not offered 1985-86.

349 **Internship in Economics.** S. These internships which will require the student to use the tools of economic analysis involve ten to fifteen hours of work a week under an employer supervisor and a series of internship seminars on campus. Each intern, after consultation with the internship coordinator, will submit a research paper and a short personal evaluation of the internship. Prerequisites: appropriate courses in economics, completion of the mathematics cognate requirements, junior or senior stand-

ing, and permission of the internship coordinator. *Staff.*

390 **Independent Study.*** F, I, S. Prerequisite: permission of the chairman.

395 **Economics Seminar.*** A study of the methodology of economics and of one or more of the significant problems in economics. Emphasis on oral and written reports and on extensive reading in current economics journals. Prerequisites: senior economics major status. *Mr. R. Hoksbergen.*

JANUARY 1986 INTERIM

BUSINESS

W11 **The Health Care System of The United States.** Can health care be made affordable and accessible to all? What is the role of the hospital administrator, the physician, and the public and private third-party payer in today's health care matrix? Students will investigate the current systems of health care delivery, evaluate their performance, and consider proposals for future directions. The government's role as a distributor of health care services -- Medicare and Medicaid; job health and safety legislation and tax policy; the nature and operating philosophies of various health care institutions--for-profit hospitals, not-for-profit hospitals; health maintenance organizations (HMO's); evaluation of the adequacy of health care services for labor, the elderly, and the poor under existing health care policies and possible alternatives. Readings, speakers, movies, discussions. A short research paper. Economics 151 or 221 are suggested. *Mr. S. Vanderlinde.*

W51 **Case Studies and Field Studies in Human Resources Management.** Students will analyze situations dealing with human resources management. These situations are presented either by reading key case studies or by visiting various types of organizations in Western Michigan and hearing first-hand about this major area of management. In reviewing the written cases, the instructor will lead the students in considering these general background questions: what are the problems in the case?, what facts are relevant to the problems?, what are the alternative solutions to the problems?, and which solutions should be selected and implemented and why? Regarding the visits, the students will become involved with

ongoing human resources management, and they will be able to not only listen and observe but also ask questions. General topics covered revolve around personnel planning and organization, job analyses, recruitment, selection, training and development, equal employment opportunity, communication, motivation, compensation, benefits and services, employee safety and health, labor relations, and the role of the labor unions. In addition to case readings, the course includes other readings, class discussions, student presentations, and written reports. A final written report is required. Text: *Cases and Policies in Personnel/ Human Resources Management*. Prerequisite: Business 365 or permission of the instructor. Mr. D. House.

ECONOMICS

W52 Economics Decline and Industrial Policy. This course examines the recent evidence of industrial decline in the United States and the various proposals for developing a government industrial policy. Students will analyze causes of declining rates of productivity increase, poor performance of older heavy industries, increased foreign penetration of industrial markets, and problems controlling inflation and unemployment. Students will read and report orally on many recent books and articles proposing various forms of industrial policy for the United States. There is also a written examination. Prerequisite: Economics 151 or 221. Mr. J. Tiemstra.

W57 Managing Your Own Small Business. The course goes step by step through the procedures that should be taken before starting a new business, i.e., feasibility study, researching a venture, selecting a business, and financing a new business. Similar procedures for the purchase of an existing business are studied, and management procedures for operating the business after it has been started or purchased are explored. Text, supplemented by lectures from successful operators of small businesses, and augmented by the management experience of the instructor. Students will submit a written proposal for starting a business they would like to own and operate and will present this same proposal to the class orally for evaluation. The proposal must include: plan, market opportunity, promotion, competition, management, and organization, operating statement, and balance sheet. Prerequisites: Business 201 and 360. Mr. E. Hoogstra.

IDIS W13 Interim in Central America. Mr. S. Wykstra, Mr. R. Hoksbergen.

IDIS W50 Interdisciplinary Problem Solving. Mr. J. Dodge, Mr. M. Vander Wal.

IDIS W52 An Introduction to Indonesia. Mr. E. Van Der Heide.

PHIL W50 By the Sweat of Thy Brow. . . Mr. L. Hardy, Mrs. S. Roels.

Education

Professors P. De Boer, T. Hoeksema, C. Kass, *P. Lucasse, C. Mulder, D. Oppewal, L. Stegink (chairman), G. Stronks, J. Wiersma
Associate Professor B. Bosma
Assistant Professors M. Kraker, A. Post

THE VARIOUS TEACHER EDUCATION PROGRAMS are described in detail on pages 53-60. Prospective elementary and secondary teachers should initially consult the teacher education adviser of the department in which they expect to major. Students intending to enter special education should consult either Mr. Thomas

Hoeksema, coordinator of special education: mentally impaired, or Miss Myra Kraker, coordinator of special education: learning disabilities.

The elementary teacher education program requires ten course units: 301, 303, 304, 305, 322, 324, 325, 345 and 346. The secondary teacher education program requires eight course units: 301, 303, 304, 307, 308, 346, and 356. Students in special education must also complete the elementary education requirements.

Students seeking certification must be admitted to the teacher education program and be in good standing when enrolling in any course in the department.

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 and a laboratory experience to develop competence in the classroom use of audio-visual equipment. Prerequisite: concurrent registration in 301. *Staff.*

304 Philosophy of Education. F and S, core. 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. Prerequisites: 301, 303, and Philosophy 153. *Mr. P. De Boer, Mr. D. Oppewal.*

305 Elementary Teaching Methods. F and S. A study of various generic methods of teaching such as exposition, demonstration, activity, and guided inquiry, with particular application to mathematics, religion studies, and social studies and to multi-cultural instruction. (Application to other subjects is taught in later courses.) The course also focuses on the perspective of each subject, the curriculum content and goals that are appropriate to the elementary school, the teaching and learning materials that are

available, and the techniques for motivating students to understand the subject and to learn its basic content. Prerequisite: 303. *Mr. C. Mulder.*

307 Reading in Content Areas: Secondary.* F, half course. A study of the reading process as it relates to the secondary school curriculum; an analysis of the factors which enhance or impede comprehension of content area reading materials; a presentation of reading and study skills common to all content areas; an analysis of reading and study skills required in specific content areas. *Mr. L. Stegink.*

308 Reading Strategies: Secondary.* F and S, half course. A study of the types and functions of reading programs in secondary schools; a presentation of the responsibilities and qualifications of secondary teachers for applying principles of reading in daily assignments; demonstrations of techniques for meeting the wide range of reading levels found in the average secondary classroom; a review of formal and informal tests of pupil reading levels; and introduction to interpretation of test scores for screening and determining pupil reading needs. Prerequisite: 307. *Mr. L. Stegink.*

322 Introduction to Methods of Teaching Reading: Elementary.* F and S. A study of the nature of the reading process; an introduction to the various approaches to the teaching of reading with an emphasis on the basal approach; a presentation of instructional strategies appropriate to a developmental reading program; an analysis of the organization and management of a classroom reading program. *Staff.*

324 Reading Problems in the Elementary Curriculum.* F and S, half course. A study of the various kinds of problems children encounter when learning to read; an analysis of the strengths and weaknesses of common diagnostic instruments; an introduction to testing terminology and interpretation of test results; and a presentation of

approaches, techniques, and devices for differentiating instruction to fit individual needs. A field experience is included. Prerequisite: 322. *Staff.*

325 Reading and Language Arts in the Elementary School.* F and S, half course. A study of reading as a language art and its relationship to the various subjects in the elementary school. Prerequisite: 322. *Staff.*

345 Directed Teaching: Elementary. F and S, one to three course units. Students participate in full-time supervised practice teaching. Those in regular elementary education programs teach in two different schools and may, if their certification program requires it, have one experience in their major field. Prerequisites: good standing in the teacher education program and appropriate recommendations. *Staff.*

346 Directed Teaching: Secondary. F and S, one to three course units. Students participate in a full-time supervised practice-teaching experience in their major or minor field. Each course unit of 346 involves at least ninety clock hours of actual teaching. All students except those majoring in mathematics should expect to do their directed teaching during the second semester. Some students in economics, history, physical education, and political science as well as those in mathematics may apply for directed teaching assignments in the fall semester. Prerequisites: good standing in the teacher education program and appropriate recommendations. *Staff.*

356 Seminar in Secondary Teaching Methods.* F and S. A seminar taught in conjunction with 346 by the supervisors of secondary directed teaching involving general problems of pedagogy at the secondary level as well as of the methods of teaching the specific subject of the student's classroom. The seminar provides a forum for the discussion of problems that develop during directed teaching. *Staff.*

390 Independent Study. F, I, S. *Staff.*

SPECIAL EDUCATION

216 Education of Exceptional Children. F. 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 is-

ues in special education as well as of 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. Investigation of diagnostic treatment and preventive techniques. Differentiation of mental retardation from related conditions. Discussion of research and emerging concepts within the field. Prerequisite: 216. *Mr. T. Hoeksema.*

310 Diagnosis and Prescription: Mental Impairment.* S. This course is designed to acquaint students with the basic terminology and theory of assessing specific learning problems. Skill will be developed in the selection, administration, and interpretation of formal and informal, standardized and non-standardized assessment devices for the purpose of determining educational prescriptions. Prerequisite: 216 and 306. *Mr. T. Hoeksema.*

330 Curriculum and Instruction: Mentally Impaired.* F. A study of the curricula, materials, and methods appropriate to the instruction of the mentally impaired. Attention is given to the problems of organizing classes, making curricular decisions, and selecting methods and materials. A field experience with mentally impaired students is an integral part of this course. Prerequisites: 301, 303, 306, 310; 305 is recommended. *Mr. T. Hoeksema.*

347 Directed Teaching: Mentally Impaired.* S, two course units. *Mr. T. Hoeksema.*

357 Directed Teaching Seminar: Mentally Impaired.* One half course unit. *Mr. T. Hoeksema.*

GRADUATE COURSES

510 History of American Education. 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. *Mr. P. De Boer.*

512 Theories of Schooling. This course examines psychological, socio-psychological, and educational concepts relevant to an

analysis and evaluation of the schooling process. Intellectual skills required for the construction of micro-theory and the interpretation and implementation of research will also be stressed. *Mr. J. Wiersma.*

513 Psychology and the Teaching of Reading. A study of the dynamics of learning to read, including research from child psychology, psycholinguistics, educational psychology, and learning theory. Readings, lectures, and analysis of reading practices and materials from the psychological point of view will be used to improve reading instruction in all grades. Prerequisites: at least one course in reading and one in psychology. *Miss C. Kass.*

515 Moral Education. The study of a number of theories of moral education, some of which stress the cognitive approach and others the affective. The theories of Kohlberg and of Raths and Simon are studied. Individual projects and construction of teaching units. *Mr. D. Oppewal.*

530 Education of the Gifted. This course focuses on several manifestations of intellectual, social, and artistic giftedness. Several aspects of the educational and guidance process are studied, such as identification of talent and giftedness, curriculum considerations, teaching methods, role models, and guidance procedures. Prerequisite: graduate standing and teaching experience. *Staff.*

531 Teaching Children with Learning Problems. An orientation to the variety of handicapping conditions which affect school-age children. This course for regular classroom teachers acquaints them with the basic information and specialized vocabulary needed for dealing with handicapping conditions in the typical classroom. It will include consideration of major issues and contemporary practices in the education of exceptional learners. *Mr. T. Hoeksema.*

532 Instructional Gaming. Introduction to the theory and practice of simulation and non-simulation gaming for instructional purposes. Both commercially available games and games developed in class will be used and evaluated in terms of their instructional and motivational value at various grade levels and in various subject fields. *Mr. P. Lucasse.*

533 Motivating the Under-Achieving Student. A diagnosis of the learning climate of the classroom as it is affected by the socio-

cultural environment of the community and an assessment of the individual factors that affect each student's readiness to learn. Compensatory and motivational teaching materials and styles will be evaluated for their relevance to the under-achieving student. Students will relate this content to a specific classroom situation and to the broader problems of motivation and under-achievement. *Mr. P. Lucasse.*

534 School Administration. A study of the role and responsibilities of school administrators, pre-school through grade 12. The course includes a consideration of the educational leadership and management function of principals; the biblical perspectives on leadership; the theories and perspectives relevant to organizing, planning, controlling, and decision making; and the major administrative concerns of school principals. *Mr. C. Mulder.*

535 The School as a Social Organization. A study of the religious premises and theoretical bases of organizations, with special emphasis on school systems. Particular attention is paid to the teacher functioning in a school organization. A major goal of the course is an attempt to formulate a Reformed Christian theory of organizations. *Mr. L. Stegink.*

536 The Young Child in a Preschool Setting. A review and critique of the basic theories of child development. Observation and intensive analysis of the behavior of a particular child in a preschool setting as related to the major theories. Prerequisite: Psychology 204. *Miss D. Westra.*

537 Curriculum for Early Childhood Education. An evaluation of the major approaches to building a curriculum for early childhood education (up to age eight), the underlying assumptions of each approach, and the effects of each approach on the children. Prerequisites: one course in education and one in psychology. *Miss D. Westra.*

538 Staff Supervision and Development. An examination of the supervisory responsibilities and functions of school administrators with an emphasis on staff evaluation and staff development. Units of study include: a survey of the research on teacher effectiveness; models of supervision; peer, student, supervisor, and self-evaluation; models and methods for analyzing teaching; pre- and post-conferences; and the cre-

ation and implementation of staff development programs. Prerequisite: 534 or permission of the instructor. *Mr. C. Mulder.*

540 Reading Problems in the Elementary Classroom. This course is designed to enable experienced elementary teachers to work with problem readers in their own classrooms. The course includes: a study of the various kinds of reading problems encountered at the elementary level and their causes; the use of the most common formal and informal diagnostic tests with an emphasis on the strengths and weaknesses of each; a critical introduction to the reading materials available for the classroom; and a field experience involving both the diagnosis of reading problems and the use of appropriate corrective measures. Prerequisite: 322 or the permission of the instructor. *Staff.*

541 Reading Problems in the Secondary Classroom. Half or whole course. This course is designed to help secondary-level teachers recognize the reading problems they are most likely to find in their classrooms and to understand what is needed to correct the problems including the development of separate reading programs. The course includes: a study of the nature of the reading process; a survey of basic reading and study skills; an examination of the reading problems students face when they read typical high school textbooks; a consideration of alternative ways of working with problem readers; a survey of the reading and study skills materials that are appropriate at this level; the use of the most common formal and informal diagnostic tests with an emphasis on the strengths and weaknesses of each; and the development of a model program for use in a particular high school class. Prerequisite: 307, 322, a year's teaching experience on the secondary level, or the permission of the instructor. *Mrs. B. Bosma, Mrs. G. Stronks.*

542 Diagnosis and Remediation of Reading Disabilities. An advanced course for the training of reading specialists who may serve as consultants to classroom teachers and may work individually with severely disabled readers. The course includes a discussion of reading theory, a study of the specialized and general testing tools emphasizing validity and interpretation, the development of prescriptive programs for remediating the problems identified, and the

consideration of how to work with regular classroom teachers to implement such programs in a normal classroom. A field experience with a severely disabled reader will involve the development and administration of an appropriate battery of tests, the designing of a remedial program, and creation of an evaluation procedure. Prerequisite: 513, 540, 541, or permission of the instructor. *Mrs. B. Bosma, Mrs. G. Stronks.*

543 Teaching Reading Through Literature. An investigation of the development of reading skills in elementary school children through the use of literary materials. The course includes an analysis of literal and critical comprehension skills, the development of teaching strategies appropriate to the reading levels of pupils, and the building of a reading program that fosters pleasure in reading and promotes reading of library materials. *Mrs. B. Bosma.*

548 Directed Teaching: Learning Disabilities. F and S, half to two course units. *Staff.*

550 Theories of Learning Disabilities. F. As an introduction to the field, this course seeks to acquaint students with the major theoretical models of learning disabilities and with the academic, social, and motor characteristics of learning disabled children. Approaches to the education of learning disabled children which have been based on the theoretical models examined are also studied. Prerequisite: 216. *Staff.*

551 Diagnosis and Prescription: Learning Disabilities. F. A study of the basic terminology and ethical considerations involved in assessing learning disabilities. Skills are developed in the selection, administration, and interpretation of appropriate psychological and educational tests for the purpose of determining educational prescriptions. Prerequisite: 550. *Staff.*

580 Curriculum Theory and Development. F. A study of conflicting and complementary curriculum theories for elementary and secondary schools and how these theories ought to be conceived and practiced. A project in designing curriculum is required at the appropriate level and in the student's area of concentration. *Staff.*

581 Educational Philosophy and Curriculum Decisions. S. The course examines the philosophical views of selected thinkers on

curriculum. The course focuses on the differences among the best of secular and of Christian curriculum theories, with special emphasis on the way curriculum theory is related to the religious vision and the major learning goals of education. Prerequisite: at least one course in philosophy or philosophy of education. *Mr. D. Oppewal.*

582 Curriculum and Instruction: Learning Disabilities. F. A study of the curricula, methods, and materials appropriate to the education of learning-disabled children. Attention is given to the problems of organizing classes, adapting learning environments, making curricular decisions, and selecting materials and instructional methods. Special emphasis is on the development of language. A field experience with learning disabled students is an integral part of this course. Prerequisite: 550. *Staff.*

590 Independent Study. F,I,S. *Staff.*

595 Graduate Project. F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

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W10 Current Educational Approaches-Bane or Boon? In this course students will become acquainted with and evaluate a variety of methods and programs designed to encourage independence, creativity, and individualized learning among elementary school students. Included are Workshop Way, Spectrum (gifted program), Talents Unlimited, and the Learning Center approach to teaching. Students will observe in local schools where one or several approaches are used, view films, hear guest speakers, participate in discussions, conduct library research, report on related topics, and construct a detailed learning center appropriate for classroom use. *Mrs. P. Oosterink.*

W14 The Child: Growing Up Like Topsy. A study of the young child—the influences on growth and development, the problems surrounding child care, present-day answers to yesterday's questions. Each student will select an area for special study, such as TV for children, day care centers, preschools, foster children, child abuse, working mothers, the single parent play,

sexism in children's books, and others. Readings, discussions, preschool observations, films, and visit with personnel from agencies serving children. *Miss D. Westra.*

W15 Mainstreaming Children With Disabilities. This course, designed for prospective elementary teachers, explores the integration of children with disabilities in regular school programs through a study of existing models, observation in schools, interaction with local school personnel, and a variety of simulation activities in class. An overview of handicapping conditions is presented, philosophical and theological perspectives on disability is examined, and strategies for dealing with diverse learners in the regular school context is learned. Implications of the mainstreaming concept for Christian schools will be of special interest. Quizzes, short papers, and a project are required. Meets the certification requirement in many states for a course in teaching exceptional children. Not open to special education majors. *Mr. T. Hoeksema.*

W51 Multicultural, Alternative School Experience. Students will be placed at Dawn Treader School in Paterson, New Jersey. Dawn Treader is an inner-city, alternative school with a majority/minority culture mix. Special emphasis is given to using the cultural diversity and the urban setting to enhance the motivation and self-esteem of the pupils. The course includes lesson planning, tutoring, required readings, and a daily journal. The classroom teachers and principal give daily supervision and conduct weekly seminars. There will be two seminars on campus: one in December for orientation and practice of necessary skills and a summarizing seminar in February. Fee of approximately \$50 for room and board. Transportation not included. Prerequisite: permission of the coordinator. Off-campus. *Mr. P. Lucasse.*

W53 Curriculum and Methods for Multi-grade Classrooms. Students will be placed in an off-campus multigrade classroom where, because of the spread of pupil ability, they will be able to use individualization teaching techniques and peer tutoring. Special attention is given to management skills for both curriculum and scheduling in the class. The course includes lesson planning, tutoring, teaching, required readings, and maintaining a daily journal. The classroom teacher and principal provide daily supervi-

sion and weekly seminars. Mr. Lucasse conducts planning seminars before the interim and a concluding seminar during the first week of the second semester. Fee of approximately \$50 for room and board. Transportation not included. Prerequisite: permission of the coordinator. Off-campus. Mr. P. Lucasse.

W55 Using Cooperative Teaching Strategies At Rehoboth, New Mexico—a Multi Ethnic K-12 Christian School. This course is taught at Rehoboth, New Mexico Christian school. As a consequence of the unique setting, students will gain multicultural experience while working with a classroom teacher. Two major goals are emphasized: exploring a variety of cooperative teaching strategies appropriate to the multi-ethnic, K-12 setting, and developing personal skills using these methods in the actual classroom setting. Housing and meals will be in Rehoboth Christian school facilities; fee of ap-

proximately \$400. Prerequisites: sophomore status and permission of the instructor. Off-campus. Mr. P. Lucasse.

W57 Teaching Reading to Angloes and Haitians at Lake Worth Florida. This course provides experiences for elementary teacher education students in multi-ethnic settings. Participants will teach reading lessons in a multicultural public school in Boynton Beach mornings and tutor young adult Haitians in biweekly evening sessions at the Lake Worth Christian Reformed Church. Seminars will address the special needs of bilingual learners and the classroom implications for student teachers who will be teaching students from diverse cultures and language backgrounds. Lessons are analyzed and evaluated. Fee of approximately \$360. Prerequisites: 324/325 and/or permission of instructor. Off-campus. Mrs. B. Bosma.

Engineering

*Professors J. Bosscher, L. Van Poolen (chairman)
Associate Professor M. Vander Wal
Assistant Professors R. Hoeksema, D. Medema, K. Peterson*

CALVIN COLLEGE offers a four-year program leading to a Bachelor of Science in Engineering degree (B.S.E.) with concentrations in civil, electrical, and mechanical engineering as well as a three-year program for students wishing to transfer to another engineering school. For details of both programs see page 72.

A group major in engineering and physics or geology may be appropriate for some students. The group major in engineering and geology consists of Engineering 101, 202, 205, and 305; Geology 151, 152, 201, and 212; plus four approved electives. The group major in engineering and physics consists of twelve courses. Ten of these must be from the engineering and physics departments, with no fewer than four from either. The remaining two cognate courses must be chosen from a third department.

The Engineering Department is served by an advisory board of practicing engineers. Current board members are Mr. Ned Nielsen of Laser Alignment, Mr. Paul Newhof of Newhof and Winer, and Mr. Charles Spoelhof of Eastman Kodak, Inc. Calvin College is an affiliate member of the American Society for Engineering Education

101 Graphical Communication and Concept Design. F. Graphical techniques for spatial analysis; a study of basic topics in engineering drawing to provide facility in the transmission of ideas through accepted graphical means. Areas covered include orthographic projection, free-hand sketching, pictorial representation, auxiliary views, sections and conventions, basic dimensioning, and tolerancing; an introduction to the design process by means of lectures and assigned 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. 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:* 101, Mathematics 161, and enrollment in Computer Science 141. *Staff.*

103 Architectural Communication and Concept Design. F. Graphical techniques for spatial analysis; a study of basic topics in architectural drawing to provide facility in the transmission of ideas through accepted graphical means. Areas covered include orthographic projection, free-hand sketching, pictorial representation (including perspective), sections and conventions, basic dimensioning, shade and shadows, and charts and graphs. The student is introduced to the design process by means of lectures and assigned architectural projects. Readings are also assigned in design-related areas of creative thinking, aesthetics, economics, and human satisfaction. *Staff.*

202 Statics and Dynamics. S. A 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.

Prerequisites: Physics 126, 186, and concurrent registration in Mathematics 261. *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. *Staff.*

206 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. Students take either 206 or 208. *Prerequisites:* Physics 126, 186, and Mathematics 261. *Staff.*

208 Network Analysis I. S. Techniques for the analysis of analog and digital electronic circuits. Series/parallel reduction, classical loop and nodal methods, source transformations, Thevenin/Norton's theorems, applied to direct-current and sinusoidal steady state cases. Independent and dependent sources, with the operational amplifier as an important case. Natural and forced response of single transients. Students take either 206 or 208. *Prerequisite:* completion or concurrent registration in Mathematics 231. *Staff.*

Prerequisite to all courses numbered 300 or higher is formal admission to the department.

301 Engineering Electromagnetics. F. A study of the laws and engineering applications of static and dynamic electric and magnetic fields in various conductive, dielectric, and magnetic materials and under various boundary conditions. Calculation of capacitance and inductance; Poisson and Laplace equations. Time-varying fields and Maxwell's equations, proceeding to the uniform plane wave. Transmission-line equations, parameters, graphical methods. An introduction to radiation and antennas. *Prerequisites:* Physics 225, Mathematics 333. *Staff.*

304 Fundamentals of Digital Systems. S. An introduction to the fundamental principles of logic design in digital systems. Topics include: Boolean algebra, analysis and synthesis of combinational and sequential networks, register transfer language, micro-operational description and applications to computer design, computer organization and programming, and an introduction to microprocessors. Laboratory work will include logic design, programming, and interfacing of a micro-computer as an example of a complete digital system. Prerequisites: 206 or 208 and CPSC 141. *Staff.*

305 Mechanics of Materials. F. Application of principles of mechanics to the 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 theory of failure and energy methods. Laboratory experiments are used to emphasize principles. Prerequisite: 202. *Mr. M. Vander Wal.*

307 Network Analysis II. F. Advanced techniques for the analysis of analog electrical networks. Topics include: sinusoidal steady-state power calculations (including three phase), mutual inductance, parallel and series resonance, s-domain analysis (using Laplace transforms, Fourier series, and Fourier transforms), and an introduction to two port parameters. Frequency response is determined using transfer functions, Bode plots, and pole/zero plots. Prerequisites: 208 and Mathematics 231. (Previously 322.) *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 incompressible flows. One-dimensional flow analysis. Introduction to boundary layer theory. Dimensional analysis and laboratory experiments utilized to determine significant flow parameters. Computer analysis is utilized. Prerequisites: 202 and Mathematics 231. *Mr. R. Hoeksema.*

310 Thermodynamics. S. An introduction to concepts of work and heat, properties of a pure substance, first law, second law, entropy, thermodynamic relations. Prerequisites: Mathematics 231 and Physics 126 and 186. *Staff.*

311 Electronic Devices and Circuits. F. A study of the characteristics and qualitative internal action of commonly used micro-electronic devices for discrete and integrated circuits, such as diodes, junction field-effect transistors (JFET's), metal-oxide semi-conductors FET's (MOSFET'S), and bipolar junction transistors (BJT's). Application of these devices in a variety of circuits, operational amplifiers, non-linear circuit applications of diodes, basic digital logic gates, basic amplifier circuits. Laboratory exercises are used to illustrate concepts. Prerequisite: 208. *Staff.*

312 Principles of Analog Computation. 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. Prerequisite: Mathematics 231 or permission of the instructor. Not offered 1985-86.

313 Soil Mechanics and Foundation Design. F. Soils studied as engineering materials whose behavior is dependent upon soil types, index properties, and soil moisture conditions. The scope of the course includes soil structures, index properties, soil identification, permeability, compressibility and consolidation, soil testing, static and dynamic pressures, effective pressures, and foundation design. Laboratory experiments are used to emphasize principles. Prerequisite: 305. *Mr. R. Hoeksema*

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 231 and Physics 126 and 186. *Staff.*

315 Control Systems. F. 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. Prerequisite: Mathematics 231. (Previously 318.) *Staff.*

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. Computer analysis is utilized. Prerequisites: 309, Mathematics 231, and Physics 126. *Staff.*

317 Engineering Instrumentation. F. An introductory study of engineering measurement and instrumentation theory and technique. Types of systems and their response in the time and frequency domains are studied. The characteristics and uses of transducers to measure pressure, acceleration, strain, voltage, and other physical quantities are emphasized with attention on the usefulness, accuracy, and reliability of physical measurements. Electronic signal conditioning and digital techniques are covered. Laboratory work and instrumentation project emphasize actual applications. Prerequisite: 206 or 311. *Mr. J. Bosscher.*

320 Hydraulic Engineering. S. Application of the basic principles of fluid mechanics to practical problems in hydraulic analysis and design. Topics include steady open channel flow, flow measurement, turbomachinery, closed conduit flow, pipe networks, unsteady flow, hydraulic structures, and groundwater flow. Computer techniques are frequently used. Prerequisite: 309. *Mr. R. Hoeksema.*

324 Materials and Processes in Manufacturing. S. Application of scientific and engineering principles to fabricating processes such as casting, welding, forming, machining, and computer-aided manufacturing (CAM) so as to determine the relation of process to material properties, economics, dimensional accuracy, and energy requirements. Prerequisites: 205 and 305. *Mr. J. Bosscher.*

325 Digital Circuits and Systems Design F. A study of the techniques for analysis and synthesis of combinational, iterative, and synchronous sequential logic circuits. The student is introduced to digital logic families (TTL, ECL, ILL, MOSFET, CMOS logic), electrical characteristics of combinational and sequential integrated logic packages, A/D and D/A conversion, control units, bus standards, micro-processors, static/dynamic memory units (RAM, ROM, PROM, EPROM), asynchronous logic, and interfacing. Laboratory experiences emphasize principles and design of digital systems. Prerequisites: 304 and 307. *Staff.*

326 Structural Analysis. S. A study of beams, two-dimensional trusses, and rigid

frames. Course work includes calculation of shear forces and bending moments due to fixed and moving loads, calculation of deflection, analysis of moving loads using influence lines, and the analysis of statically indeterminate structures. The course also includes an introduction to matrix methods in structural analysis. Prerequisite: 305. *Mr. M. Vander Wal.*

327 Structural Design F. Application of principles of mechanics of solids and structural analysis to the design of structural members made of steel or reinforced concrete. Allowable stress and ultimate strength design procedures are studied along with the AISC specification for the design, fabrication and erection of structural steel for buildings and the ACI building code requirements for reinforced concrete. Computer techniques are used as aids to analysis and design. Prerequisite: 326. *Mr. M. Vander Wal.*

328 Advanced Thermodynamics. S. Application of basic thermodynamic principles to the analysis of power and refrigeration cycles, air conditioning processes, chemical equilibrium, combustion, and compressible flow of fluids. Laboratory exercises are utilized to emphasize principles. Prerequisites: 309 and 310. *Mr. L. Van Poolen.*

329 Machine Design. F. Application of engineering mechanics, materials, and manufacturing concepts to the analysis and design of mechanical elements and systems. Computer techniques are used as aids to analysis and design. Prerequisites: 305 and 324. *Mr. L. Van Poolen.*

330 Electronic Circuits Analysis and Design. S. A study of electronic devices in analog and digital circuits. Topics include: device modeling, biasing, frequency response, feedback principles, Bode plots, operational amplifier, oscillators, single and multi-stage amplifiers, analog integrated circuits and filters. SPICE and other computer-aided design tools are used in the course. Students will assemble and test circuits in a laboratory. Prerequisites: 307 and 311. *Staff.*

336 Advanced Circuit Design. S. Analysis and design of integrated electronic circuits. A study of untuned and tuned voltage and power amplifiers, operational amplifiers used in a variety of applications, analog filter design, an introduction to digital filtering, modulators/demodulators, phase-lock-

ed loops, IC power management circuits, microprocessors as components in programmed logic, control systems, and filters. Emphasis is on realization of design specifications using commercially available integrated-circuit packages. Laboratory work in design. Prerequisites: 325 and 330. *Staff.*

340 Senior Design Project. S. A study of topics related to the practice of engineering design as well as the participation in the completion of a major group project. Topics are the engineering enterprise, the design process, socio-economic evaluation of projects, the role of values in design, communication of the design. The focus of the course is the design project to be submitted in written/graphical report form and possibly in prototype form where appropriate. Prerequisite: senior standing in the engineering program. *Staff.*

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

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W51 Engineering Instrumentation. An introductory study of engineering instrumentation. This course provides for two-track specialization; either toward mechanical application or toward electrical signal characteristics and processing. Extensive laboratory work for both groups allows investigation of transducer characteristics and uses including physical measurement, accuracy, and reliability. Prerequisites: 208 or

206, and for those in the mechanical track, 305. *Mr. J. Bosscher.*

W53 Software Engineering. This course is designed to teach proper software engineering techniques. The course covers basic software design strategies and introduces the students to large-scale software development and programming methodology. A software project involving the use of a microprocessor in an environmental control application is used to illustrate the techniques presented. Students will work on this project as part of two to three member teams. Course lectures are based on *Principle of Software Engineering and Design* by Zerkowitz, et al. This course is restricted to senior engineering students. *Mr. D. Medema.*

W54 Finite Element Method Analysis. The finite element method is a design tool widely used in many areas of engineering. Students will consider historical development, fundamental principles, and the various applications of the method. They will be expected to write computer programs and to use existing general purpose programs to solve analysis and design problems. Grades are based on problem sets, reports, a course project, and a final exam. Prerequisite: senior standing in engineering. *Mr. R. Hoeksema.*

IDIS W50 Interdisciplinary Problem Solving. *Mr. J. Dodge, Mr. M. Vander Wal.*

IDIS W54 Philosophy of Technology. *Mr. L. Van Poolen, Mr. C. Orlebeke.*

English

*Professors H. Baron, L. Basney, E. Ericson (chairman), G. Harper, I. Kroese, K. Kuiper, P. Oppewall, **C. Otten, J. H. Timmerman, S. Van Der Weele, C. Walhout, M. A. Walters, †S. Wiersma*

*Associate Professors M. Schwartz, W. Vande Kopple, *J. Vanden Bosch*
Assistant Professors D. Hettinga, G. Schmidt, R. Verbrugge

THE ENGLISH DEPARTMENT offers a major in English and majors and minors in secondary and elementary English education. Prerequisite to any of these concentrations is a minimum grade of C (2.0) in 100. Normally, English 100 is the first course taken in the department.

The recommended program for the general English major requires one course from 202, 304, 305, 306, and 307; one from 203, 308, and 309; one from 313, 314, 315, and 321; and one from 302, 329, 330, and 331. In addition, the major program requires 303, 310, 311, and three other courses, including not more than one interim course and excluding 100, 212, 235, 251, 260, 325, 326, 336, and 360.

The recommended program for the secondary-education English major is: 202; 203; 303; 310; 311; 220, 240, 251, or 326; 329 or 330; 313, 315, 319, or 321; 336. In this major, students must pass a screening test, which is given in November, April, and July; seniors must take 336 in the fall and Education 346 and 356 in the spring.

The six-course recommended program for the secondary-education English minor is: 202; 203; 310; 311; a course in writing (235, 260, 332, or 333), in teaching writing (336), or in language (329 or 330); an elective (excluding 100 and 212).

The recommended program for the elementary-education English major is: 200 or 220; 202; 203; 212, 310, or 311; 325 or 326; 329 or 330; 335; 313, 315, 319, or 321; an elective (excluding 100).

The recommended program for the elementary-education English minor is: 200, 220, or 240; 202 or 303; 203, 313, 314, 315, or 321; 212, 310, 311; 325 or 326; 335, 329, or 330.

A student may alter any of the recommended programs with the permission of an academic adviser. The advisers are Mr. Kenneth Kuiper and Mr. William Vande Kopple for the secondary-education programs, Mr. Henry Baron for the elementary-education programs, and all professors in the department for the general-major program.

An interdisciplinary supplementary concentration in journalism requires Communication Arts and Sciences 230, English 260, English 360 (or 332); in addition, the student must choose three courses from English 332, Art 350, Art 351, an internship, and from such interim courses as Technical Aspects of the Media, Legal and Ethical Aspects of the Media, Television and Behavior, and Mass Media and American Politics. The adviser for this program is Mr. Steve J. Van Der Weele.

An interdisciplinary supplementary concentration in linguistics requires 329, 330, Communication Arts and Sciences 150, and 307. In addition, the student must choose two electives, to be selected in consultation with the adviser for this program. The adviser is Mr. William Vande Kopple.

The core requirement in written rhetoric is met by 100 or by examination. The first literature core requirement is typically 200, 202, 203, 212, 220, or 240; but any course in literature (as distinguished from language, composition, and film) except 325 and 326 may fulfill this requirement. Any literature course other than those offered during the interim will satisfy additional core requirements in the fine arts.

100 Written Rhetoric. F and S, core. A study of written English rhetoric, including a review of grammar, extensive practice in writing expository essays, and the preparation of a research paper. *Staff.*

200 Understanding Literature. F and S. A study of selected literary works with an emphasis on their formal qualities and cultural

significance. The course aims to enhance the student's understanding of fiction, poetry, and drama. *Staff.*

202 Survey of English Literature I. F. A survey of major works of English literature from its beginnings to the late eighteenth century. *Mr. L. Basney, Mr. E. Ericson, Mr. G. Harper.*

203 Survey of English Literature II. S. A survey of major works of English literature from the late eighteenth century into the twentieth century. *Mr. E. Ericson, Mr. G. Harper, Mr. J. Vanden Bosch.*

212 American Literary Classics. F and S. A critical study of American masterpieces as the literary embodiment of the evolving mind, 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.*

220 World Literature.* F and S. A course of selected readings and lectures in the literature of the European continent, ancient and modern, with special emphasis on the period from Dante to Solzhenitsyn, and with particular attention to significant forms and themes. *Mr. J. Vanden Bosch, Mr. S. Van Der Weele.*

235 Practice in Composition. F and S. A second course in rhetoric and composition designed for students who wish additional practice in basic writing skills but who do not qualify for 332. Includes readings, a review of basic principles of rhetoric, and extensive practice in writing a variety of short papers. *Miss M.A. Walters.*

240 Modern Canadian Literature. F. A study of selected works, principally twentieth-century fiction from English Canada, with some attention to major poets and French Canadian writers in translation. Emphasis is placed on the social and historical context of Canadian literature. *Mr. H. Baron.*

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 readings in film history and criticism as well as the viewing and analysis of movies. *Mr. I. Kroese.*

260 Basic Journalism. F. A study of the principles and techniques of journalism—especially newspaper journalism—specifically, the definition of news and the varying policies governing the selection and presentation of local, national, and international stories. Against the background of a critical appraisal of current practices, students write, edit, and evaluate news reports and feature stories. *Mr. D. Hettinga.*

295 Studies in Literature: The Uses of Nature in Literature and Life. S. A study of literature which treats nature as the practical ecological setting for human life, particularly since the industrial revolution. Readings will range from classical antiquity to modern times. They will include background reading in Virgil and Shakespeare. Major texts will be drawn from Wordsworth, Cobbett, Thoreau, Frost, and Wendell Berry. There will be passing looks at Thomson, Gray, Dorothy Wordsworth, Emerson, and recent poets such as Gary Snyder and Hayden Carruth. *Mr. L. Basney.*

302 Medieval English Literature.* F. A study of Chaucer's *Canterbury Tales* and other selections from his work which reflect his literary genius and the major cultural phenomena of his time. Supplementary study of other works and literary movements related to the period. *Mr. J. H. Timmerman.*

303 Shakespeare.* F and S. A study of the major works of William Shakespeare. *Mr. L. Basney, Mrs. C. Otten, Mr. S. Van Der Weele.*

304 Literature of the English Renaissance.* F. A study of the poetry and of some prose of the sixteenth century and of the drama of the sixteenth and early seventeenth centuries exclusive of Shakespeare. *Mr. S. Van Der Weele.* Not offered 1985–86.

305 English Literature of the Seventeenth Century.* F. A study of poetry and prose in England from 1600 to 1660 with emphasis on the religious lyric, especially the poetry of Donne and Herbert. *Mr. E. Ericson.*

306 Milton.* S. An intensive study of the poetry and prose of John Milton. *Mr. E. Ericson.*

307 English Literature of the Eighteenth Century.* S. A study of the Restoration author John Dryden, and of English poetry and prose in the eighteenth century, with emphasis on Addison, Pope, Swift, and Johnson. Gray, Thomson, Collins, and Cowper will receive attention as poets of "the Age of Sensibility." *Mr. S. Van Der Weele.* Not offered 1985–86.

308 English Literature of the Early 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. *Mr. I. Kroese.*

309 English Literature of the Middle and Later Nineteenth Century.* S. 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. G. Harper.*

310 Literature of the United States I.* F. A survey of the literary works of the colonial and revolutionary periods. Intensive studies of the major romantic writers from 1820 to the Civil War. *Mr. P. Oppewall, Mr. C. Walhout.*

311 Literature of the United States II.* S. A study of the important writings of the post Civil War period, including the realistic and naturalistic movements, the development of modernism in poetry and fiction, and the achievements of the post-World War I generation in the 1920s and 1930s. *Mr. P. Oppewall, Mr. C. Walhout.*

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. J.H. Timmerman.*

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. *Mrs. M. Schwartz.*

315 Modern British and American Fiction.* F and S. Intensive reading of selected works of major twentieth-century British and American novelists. *Mr. P. Oppewall.*

319 Literature since 1945.* S. A study of the fiction and poetry of America and England since World War II. *Staff.* Not offered 1985-86.

321 Modern Drama.* F. Plays by the following authors are read and discussed in relation to the major movements in modern drama: Ibsen, Chekhov, Shaw, Brecht, Pirandello, Beckett, O'Neill, Miller, Williams, Albee, and Pinter. *Miss M. A. Walters.*

325 Children's Literature.* F and S. A study of children's literature, including intensive reading of the best of this literature and the application of literary standards to what is read. *Mrs. C. Otten, Mr. G. Schmidt.*

326 Adolescent Literature.* F. A study of adolescent literature, including intensive reading in the best of this literature and application of literary standards to the reading. *Mr. H. Baron.* Not offered 1985-86.

329 Linguistics.* F. A study of some of the more interesting and important characteristics of language, with particular attention given to the assumptions informing the nomenclature, methodology, and scope of traditional, structural, transformational, generative-semantic, and text grammars. The course incidentally considers the relationship of these grammars to the study of reading, composition, and literature. *Mr. W. Vande Kopple.*

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. G. Schmidt.*

331 Literary Criticism.* S. An introduction to contemporary theories and methodologies of literary criticism with investigations into their historical origins and development. The course includes illustrations of the various methods as well as some practical criticism. *Mr. C. Walhout.*

332 Advanced Composition.* S. A course in advanced expository writing. Readings in the formal essay, together with writing in such types of composition as the formal and informal essay, the opinion editorial, the informative and feature article, and the book review. Open to students who have earned at least a B (3.0) in 100. *Mr. S. Van Der Weele.*

333 The Writing of Poems, Stories, and Plays.* S. A course in the principles of composition of poems, stories, and plays. Works by contemporary authors are analyzed in the light of these principles. Students will practice writing in all three forms. Prerequisite: a grade of B (3.0) in 100. *Mr. J. H. Timmerman.*

335 Language, Grammar, and Writing for the Elementary Classroom.* S. An introduction to several significant and practical aspects of the nature of language, a review of the nature of traditional grammar, including some comparisons of traditional grammar with more recently developed gram-

mars, and an exploration of the relationships between these grammars and composition instruction and practice. *Staff*. Not offered 1985-86.

336 Teaching of Writing.* F. A course in the principles, practice, and pedagogy of composition, especially as these apply to junior high and high school writing programs. Extensive reading and frequent exercises in composition, revision, and evaluation. Senior majors in teacher education programs must take this course in the fall and Education 346 and 356 in the spring semester. *Mr. H. Baron*.

360 Investigative Reporting and Feature Journalism. S. A course in the ethics and methods of investigative reporting and in the art of writing feature stories. The course pays particular attention to the process by which specialized information from various fields—government, science, engineering, medicine, law, religion, and business—is prepared for public comprehension. Students write, edit, and evaluate feature stories designed for weekly and monthly periodicals. English 260 is recommended as a prerequisite but not required. *Mr. D. Hettinga*.

390 Independent Study. F, I, S. Prerequisite: permission of the chairman.

395 Seminar: Flannery O'Connor.* F. A study of all of Flannery O'Connor's fiction, as well as her *Mystery and Manners* and *The Habit of Being*. Critical analyses will include readings in O'Connor's critics and culminate in a major paper. *Miss H. Ten Harmself*.

GRADUATE COURSES

510 Literature for the Adolescent. F. A survey and evaluation of adolescent literature, an examination of reference tools and approaches to the teaching of adolescent literature, a consideration of criteria for selection, and a critical study of several representative works. *Mr. H. Baron*.

511 Studies in Analytical Approaches to the Teaching of Literature. An examination of the theoretical considerations underlying various approaches to teaching literature at the secondary level and application of critical approaches to selected literary works. The specific subject matter will be defined each time the course is offered. *Staff*.

526 Recent Literature for Children. A survey and evaluation of children's literature,

with emphasis on the more recent literature; consideration of criteria for selecting children's literature; examination of reference tools, recent trends, issues, and approaches to the teaching of children's literature; and critical study of several representative works. *Staff*.

531 Language and the Elementary Classroom. A study of some aspects of traditional grammar and an introduction to the history of English and current linguistic theory and concerns. Special emphasis is placed on the implications of this knowledge for classroom teaching. *Staff*.

537 Teaching of Writing in Elementary and Middle Schools. A course in the principles and practice of writing, including the study of techniques appropriate for teaching elementary and middle school students to write well. *Staff*.

580 Principles, Practices, and Programs in Secondary English Education. S. An advanced methods course for those teachers working at the junior high school or high school level. It involves general principles, materials, and pedagogical practices with emphasis on current trends and developing problems. Each student will make a special study of a given area of language, composition, or literature. *Mr. H. Baron*.

581 Methods and Materials in the Language Arts. S. A study of programs and techniques of effective teaching of language arts in the elementary school plus a review of current materials in relationship to improvement of instruction. *Staff*.

590 Independent Study. F, I, S. *Staff*.

595 Graduate Project. F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff*.

JANUARY 1986 INTERIM

W10 Adventure, Mystery, Romance: Forms of Popular Literature. An examination of the major types of popular literature that includes consideration of mysteries, hard-boiled detective stories, westerns, social melodramas, and romances. As students read and discuss both nineteenth and twentieth-century examples of popular fiction, they will consider what these books provide that is missing in so-called great

literature. Students will compare the heroes and heroines of the last century with the heroes and heroines of our own, and then examine and evaluate the world views implicit in the literature. Tentative plans call for the reading of such authors as James Fenimore Cooper, Edgar Allan Poe, Agatha Christie, Mario Puzo, Raymond Chandler, Zane Grey, Louis L'Amour, and Victoria Holt. Film versions of much of the fiction are also shown. The course includes lectures, discussions, and quizzes. A short paper and a brief oral report are required. A reading list will be available in the English department office before Christmas. *Mr. D. Hettinga.*

W12 The Holocaust in Poetry and Fiction. An exploration of the holocaust, using poetry, short stories, novel, diaries, and critical prose. In the first half of interim, students will consider authors who participated in the holocaust. Some of the authors who might be included are Steiner, Borowski, Sach, Kovner, Kaplan, Pagis, Wiesel, Singer, and Celan. The discussions center on the authors' new applications of literary form. For the second half of interim, students will explore authors who treat the holocaust but did not participate in it. Some of the authors who might be included are Bellow, Jarrell, Levertov, Kosinski, and Plath. These discussions focus on the authors' rights to use the holocaust for personal expressions. This course includes lecture, discussion, film, student presentations, and a paper. A reading list will be available in the English department office in December. *Mrs. C. Winters.*

W13 Shakespeare's Greatest Hits. A study of seven of Shakespeare's most popular plays. The goal of the course is the understanding and enjoyment of Shakespeare both on the page and in performance. Lectures, films, recordings, discussions, reports, and possibly a trip to a performance. *Miss M. A. Walters.*

W14 Points of View: The Importance of the Telling in Fiction and Verse. The objective of this course is to develop the student's sensitivity to the crucial role of point of view in literature. Since this objective could never be met apart from understanding other literary elements as well, the works selected are studied as whole pieces of literature, not merely as instances of certain choices of narrative technique. But these studies always include an alertness to the contribution of such choices. Students will read consider-

able fiction and some poetry, view several films, and respond in writing and class discussion to the works assigned. Lectures are limited to matters of background and topic development. Learning takes place mainly through directed reading, class discussion, and informal presentations. There are some short papers plus quizzes and a final examination. Students are urged to read full-length works such as *Wuthering Heights*, *The Adventures of Huckleberry Finn*, *The Heart of Darkness*, *The Red Badge of Courage*, and *The Turn of the Screw* before the course begins. A reading list will be available in the English department. *Mr. I. Kroese.*

W15 The Great American Novel. "To each his own tastes" holds true, perhaps, even in literary matters—from Louis L'Amour to Barbara Cortland. But what constitutes a great American novel? And how do readers decide which is the great American novel? This interim class will explore this question by analyzing some twentieth-century contenders for the category: Fitzgerald's *The Great Gatsby*, Steinbeck's *The Grapes of Wrath*, Hemingway's *The Sun Also Rises*, Faulkner's *The Sound and the Fury*. The class will also consider two works by Calvin alumni, Manfred's *Conquering Horse*, and De Vries's *The Blood of the Lamb*. Lectures, discussions, films, and two tests. *Mr. J. Timmerman.*

W16 The Black American Experience Through Literature. An exploration of the uniqueness of the Black American experience as interpreted by its most gifted writers. Students will read works in poetry, fiction, and autobiography. Special emphasis on classic autobiographies by Booker T. Washington, W.E.B. Dubois, and Richard Wright; and on the best fiction of Wright, James Baldwin, Ralph Ellison, Toni Morrison, and Alice Walker. Some attention is paid to the Black contribution to American English and music as an adjunct to the study of the literature. Films, lectures, discussions, quizzes, and a paper. Reading list available in the English department office in December. *Mr. P. Oppewall.*

W17 Christian Lives. A study of six autobiographical accounts of Christian experience: Augustine's *Confessions*, Bunyan's *Grace Abounding*, Newman's *Apologia pro Vita Sua*, Lewis's *Surprised by Joy*, Merton's *The Seven Storey Mountain*, and Bonhoeffer's *Letters and Papers from Prison*. The professor will lecture on personal writing, including

journals, diaries, and letters. The class will discuss the texts, considering such questions as the following: How is day-to-day experience rendered in writing? How is it shaped by standard "forms" or "patterns" of life, such as the stages of conversion? What happens when personal writing is used as a mode of preaching? Each student will write about his own experience, including religious, as one of two required papers. *Mr. L. Basney.*

W18 Christianity and Satire. A consideration of the theory of satire with special attention to the demands of Christian ethics and theology, along with readings of specific religious satire. Selected authors include Chaucer, Langland, Dryden, Pope, Swift, Defoe, Byron, Browning, Shaw, Eco, Keillor (of "A Prairie Home Companion"), and Yaconelli (of "The Wittenburg Door"). Typical questions will be whether the fear of the Lord precludes humor altogether, whether any formal considerations limit the destructiveness of satire against persons, how satire fits into the pattern of God's justice, how one can draw the line between satirizing human expressions of faith and blaspheming against the Holy itself, and whether humor is actually necessary to prevent idolatry. The class includes lecture and discussion. Two or three short papers will be required. *Mrs. M. Schwartz.*

W50 South African Literature (in English). Students will examine selected literary works—primarily fiction—with the aim of seeing how the literature reflects and/or critiques the society. Students will spend some time on the history of the South Africa, the development and effects of apartheid, and the role of religion in that society. The literature includes a few landmark novels of the past as well as representative works by both blacks and whites from more recent times. The course is conducted by means of student reports, discussions of the fiction, and, where possible, by films and visiting lecturers. Each student will be asked to make two reports: one on a social or historical topic, and one on a novel not included in the reading list. A reading list will be available in December. The novels are neither difficult nor long, but a fair amount of reading is required. Prerequisite: one course in literature or permission of the instructor. *Mr. C. Walhout.*

W51 Legal and Ethical Issues in the Media. A study of the legal and ethical con-

straints i.e., law, voluntary codes, self-imposed ethical criteria, that regulate the mass media, and the assumptions inherent in these regulations. Students will examine landmark decisions as well as more contemporary case histories. A list of criteria will enable the general student to function discerningly as a user of the media, and guide the journalism student in his relationships with the media. Some attention is given to ethics in writing—the criteria for accuracy, truth, responsibility, and integrity in writing for the media. Several textbooks, readings, group reports, guest lecturers. Grades will be based on quality of class response and a take home examination. CAS 230 is a desirable prerequisite. *Mr. S. Van Der Weele.*

W53 The Literature of the Sea. This course involves the exploration of the large and lively literature of the sea in British writing from *Beowulf* to the present, in prose, both narrative and fictional, and in poetry. One objective of the course is to examine the purposes for which the literature was written. These purposes range from the need to provide reports to shipowners, backers of trading ventures, scientific societies sponsoring explorations, military and political authorities, and missionary societies, to the desire to give expression to the delight, fear, and awe inspired by the presence and power of the sea, sometimes even the holy awe felt by strongly religious seamen such as Drake. Special attention is given to the way in which the sea and travel upon it or toward it have provided a rich stock of metaphor and symbol to writers (e.g., Joseph Conrad). Class is conducted by lectures and discussion, and there will be reports and an examination. Prerequisite: 100; 200 is desirable. *Mr. G. Harper.*

W54 Genres in Children's Literature. This course introduces students to the range of books available for elementary children, including representative works from major genres, criteria for criticism, and contemporary issues. Students will read books by some of the best authors, past and present, such as Lewis, Alexander, Paterson, L'Engle, Carroll, De Jong, White, O'Dell, Fox, Hamilton, Forbes, and Spere. Lectures, discussions, reports, films, book evaluations, and possibly a guest author. A reading list will be available in the English department in December. Not open to students who have taken or expect to take 325. *Mrs. P. Tigchelaar.*

W59 Solzhenitsyn and Bulgakov. This course focuses on two Russian writers who have lived and worked during the Soviet period of Russian history. Solzhenitsyn receives considerably more attention than Bulgakov. Tentative plans call for reading *The Master and Margarita* by Bulgakov and *One Day in the Life of Ivan Denisovich*, *The First Circle*, *August 1914*, and the abridgment of *The Gulag Archipelago* by Solzhenitsyn. Two or three of Solzhenitsyn's addresses may also be included. Because the reading list is substantial, students are strongly urged to do some of the reading before the course begins. A reading list with specific instructions will be available in the English department office before Christmas. The class will discuss the books. There is a film and a videotape or two. A paper is required. Prerequisite: a college course in literature or the approval of instructor. *Mr. E. Ericson.*

W62 Interim in Ottawa: Christianity and the Canadian Novel. An examination of several prominent Canadian novelists to determine how a Christian heritage has influenced their writings, and a critical analysis of how an author's negative or positive response to Christian belief and practice has informed the aesthetic and thematic aspects of his or her work. Novelists may include Morley Callaghan, Hugh Hood, Hugh MacLennan, Margaret Laurence, Rudy Wiebe. The reading list will be available before Christmas in the English office. Lectures, discussions, films, independent research, quizzes, and the keeping of a reading journal. Fee of approximately \$500. Prerequisite: at least one college level literature course or permission of the instructor. *Mr. H. Baron.*

IDIS W18 From Da-Da to Discourse: The Acquisition and Development of Language. *Mr. W. Vande Kopple.*

Environmental studies

SEE THE DEPARTMENT OF GEOLOGY, GEOGRAPHY, AND ENVIRONMENTAL STUDIES for a description of courses and programs of study in environmental studies.

French

Professors A. Otten, C.-M. Baldwin (chairman)
Assistant Professor E. Monsma

PROGRAMS FOR STUDENTS wishing to major in French are worked out for them individually by the chairman. To be eligible a student must have completed at least two courses in French with a minimum grade of C (2.0) and must have completed 101-102, 121-122, or the equivalent.

The program of concentration includes 201-202 or the equivalent, 215, 216,

217, 218, and four additional 300-level courses. If approved in advance, one French interim course will count towards the major. Approved courses completed in a junior year program in France may be applied to the program of concentration. The six-course minor program must include 215, 216, 217, and 218. Nine college-level courses in French are required for a teacher-education major and six for a teacher education minor. In order to qualify for the spring semester teaching internship, students must pass the qualifying French language test before the end of the junior year. Students beginning their study of French in college should consult the chairman early in their college career. Cognates in a second language, art (231, 232), English or American literature (202, 203, 212, 303), and history (220) are recommended.

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. *Mrs. E. Monsma.*

102 **Elementary French.** S. Continuation of 101. *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. *Mrs. E. Monsma, Staff.*

201 **Intermediate French.** F. Further training in spoken and written French, study of the structure of the language, and practice in listening and reading. *Mr. A. Otten.*

202 **Intermediate French.** S. Continuation of French 201. *Mr. A. Otten.*

215 **Advanced Conversation.** F. This course is designed to develop advanced oral comprehension skills as well as advanced competence in spoken French through exercises, drills, conversation in class and in small groups. Prerequisite: 123, 202, or the equivalent. *Mrs. C.-M. Baldwin.*

216 **Advanced Grammar and Composition.** S. Systematic study of advanced gram-

mar and composition. Prerequisite: 123, 202, or the equivalent. *Mrs. E. Monsma.*

315 **French Phonetics and Oral Comprehension** F, half course. This course is for the advanced student who wishes to improve fluency in and knowledge of the language, who wants to prepare for the teaching of French, or for graduate study. Major emphasis: descriptive and corrective phonetics, dictation. Prospective teachers should take this course in their junior or senior year. Prerequisite: 216 or permission of the instructor. Not offered 1985-86.

316 **French Composition and Oral Comprehension.** S, half course. This course is for the advanced student who wishes to improve fluency in and knowledge of the language, who wants to prepare for the teaching of French, or for graduate study. Major emphasis: advanced grammar, oral comprehension, stylistics, and *la dissertation*. Prospective teachers should take this course in their junior or senior year. Prerequisite: 216 or permission of the instructor. *Mrs. C.-M. Baldwin.*

LITERATURE

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

217 **Introduction to French Literature.** F. An introductory study of important texts illustrating the genres and major themes of French literature. Conducted in French. *Mr. A. Otten.*

218 **Introduction to French Literature.** S. A survey of the development of French literature from the Middle Ages to the present. Conducted in French. *Mrs. C. -M. Baldwin.*

311 **French Drama.*** S. A study of dramatic literature from the Middle Ages to the present day, with emphasis on classical and contemporary drama. Conducted in French. Not offered 1985-86.

312 **The French Novel.*** F. 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. C.-M. Baldwin.*

313 **French Poetry.*** S. 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 poets of the modern period, beginning with Baudelaire. Conducted in French. *Mr. A. Otten.*

314 **French Prose.*** S. A study of major writers expressing French thought, spirit, and sensibility in nonfiction from Calvin to the present. Special attention is paid to the tradition of the *moralistes*. Conducted in French. Not offered 1985-86.

371 **Literary Doctrines and Problems.*** S. 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. Not offered 1985-86.

390 **Independent Study.** Introduction to the materials and methods of research. 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

272 **Introduction to French Culture and Civilization.** An introduction to the cultural traditions of France and to the way these are reflected in its social, political, and religious institutions and in its literature, art, and

music. The course is taught in English; no knowledge of French is required. Satisfies the foreign culture option for students in designated programs. Not offered 1985-86.

372 **French Civilization.** F. A study of French history and geography, with emphasis on the major political, social, and artistic movements of the past and present. Designed to enhance the student's knowledge of French culture and to enrich his literary studies. Conducted in French. Not offered 1985-86.

JANUARY 1985 INTERIM

W51 **Quebec Live: Interim In La Belle Province.** During a two and a half week stay in Jonquiere, students in small groups will attend forty-two hours of class taught by local instructors. By living with families who will provide lodging and meals and by enjoying sports and cultural activities, the students will have an opportunity to experience Quebec culture. Students will spend five days in Quebec City as guests of a francophone congregation, sharing in the lives and vision of Reformed Christians in Quebec. Sightseeing and participation in cultural activities is a component of the visit. Evaluation of students will be by the various instructors. Approximate cost: \$950 (U.S.) Prerequisites: 123 or 201, and permission of instructor. Off-campus. *Mrs. E. Monsma.*

W53 **Paris and the Arts: 1900-1950.** Many important foreign artists and writers who chose to live in Paris in the first half of the twentieth century contributed to the revolutionary changes which marked that period. Claiming to speak for them, Gertrude Stein declared that Paris was the place that suited those of us that were to create the twentieth century art and literature. . . . So Paris was the place to be. After examining the social and artistic milieu which Paris provided and after identifying the art and literature which the French themselves were producing, this course studies major examples of art and literature created by foreigners living in Paris. Among these works, many of which scandalized the public and drew mixed critical reaction, are the following: Picasso's *Demoiselles d'Avignon*, Apollinaire's *Calligrammes*, Stravinsky's *The Rite of Spring*, Bunuel's surrealist film *The Gold Age*, Samuel Beckett's *Waiting for Godot*, and the like. (A complete list will be available before the end of the fall semester.) The course includes lectures, readings, films,

video tapes, slides, recordings, guests, and a final examination. Each student will prepare a report on an American or British writer or artist who lived and worked in Paris for some time during the first half of the century. No knowledge of French is necessary. Meets foreign culture requirements for professional programs. *Mr. A. Otten.*

W53 Reflections of a People: Modern Quebec Literature. One of the most outstanding features of recent French-Canadian culture is the emergence and growth of a distinctly *quebecois* literature which, ever since 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. Students will study the history and the present state of that literature and will examine closely the culture from which it stems. Readings, lectures, discussions and films are in French. A reading list will be available in early December. Prerequisite: 215, or 217, or permission of instructor. *Mrs. C.-M. Baldwin.*

122 Intermediate French. From the sequence 121-122-123, which covers the requirements for language. French 122 should correspond to a whole semester of language. Prerequisite: 121 or its equivalent. *Staff.*

Geology, geography, environmental studies

*Professors H. Aay, C. Menninga (chairman), D. Young
Associate Professor J. Clark*

PROGRAMS IN THE DEPARTMENT include major and minor concentrations in geology, a supplementary concentration in environmental studies, a minor in geography, as well as majors and minors for teacher education programs.

Programs in geology. The major program of concentration in geology consists of 151 or 105, 152, 201, 202, 212, and four additional courses approved by the adviser. Field camp is recommended. Required cognate is Chemistry 103. Recommended cognates include Chemistry 104, Physics 123, 124, 181, 182, and Mathematics 161 and 162.

The recommended program for students who wish to pursue a career or graduate study in geology consists of 151 or 105, 152, 201, 202, 212, 301, 302, 311, 313, either 395 or 396, and field camp, with cognates including Chemistry 103 and 104, Physics 123, 124, 181, 182, and Mathematics 161 and 162.

Students must have completed at least three courses in geology with a minimum average grade of C (2.0) before they may be formally admitted to the major program in geology.

The minor concentration in geology consists of 151 or 105, 152, 201, 212, and two additional courses approved by the adviser.

Group majors consisting of geology and chemistry, engineering, or physics are also available.

Programs in geography. Programs and courses in geography are offered as electives for students who wish to broaden their social science knowledge through the study of human ecology and locational analysis. A minor concentration in geography requires Geography 101, 210, 220, Geology 100, and Environmental Studies 201, plus an additional course approved by the adviser. This is the appropriate minor for secondary teacher education.

Programs in environmental studies. Courses in environmental studies are offered to those students interested in studying a broad range of environmental problems and issues at the local, national, and global levels. Because the study of such issues is truly interdisciplinary in scope, environmental studies courses are suitable for students from the humanities, the social sciences, and the natural sciences. They may be taken singly as electives to enrich a program of study or as a supplementary concentration to a major. The supplementary concentration consists of three required courses, Environmental Studies 201, 202, and 395; two courses chosen with the approval of the program adviser from among: Biology 216 or 222, 240S, 351, Chemistry 110, Environmental Studies 385, Economics 332, Geography 101, 210, Geology 100 or 103 or 105, 311, Sociology 308, or approved interim courses; and one additional elective approved by the adviser, Mr. Henry Aay.

Teacher education programs. Prospective secondary teachers wishing to teach subjects taught in this department should consult the chairman.

Prospective elementary teachers may choose concentrations including courses in geology, geography, and environmental studies. Social studies group majors require Geography 101 or a three-course sequence involving Geology 100 or 103, Geography 210, and 220.

The teacher education adviser is Mr. Clarence Menninga.

General regulations. The core requirement in the physical sciences may be met by Geology 103. The core requirement in the natural sciences may be met by Geology 151-152 or 105-152.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. Such group majors require twelve courses in the sciences and mathematics, ten of which must be from two departments with no fewer than four from either, with the remaining two courses chosen from a third department. The chairmen of the three departments involved must approve such programs.

ENVIRONMENTAL STUDIES

201 Human Activities and Natural Environments.* F. An examination of the complex system of relationships between human activities and natural environments. The ecology of natural systems will be studied by examining the relationships among their dynamic components. Upon this framework, activities by which societies—past and present—have used, affected, and transformed their natural settings are examined. Not open to freshmen. *Mr. H. Aay.*

202 Environment and Society: Issues and Policies.* S. The interactions among population, resources, technology, economics, and public policy are studied in order to understand and address the environmental issues and problems of our day. Attention is focused upon energy, material, and food resource issues as well as upon population and resource relationships. Political, economic, and technological policies plus individual lifestyles are considered as part of responsible earthkeeping. Not open to freshmen. *Mr. H. Aay.*

385 Internship in Environmental Studies.* F or S. This course is an internship involving field application of the concepts and principles learned as part of the environmental studies supplementary concentration. A student is placed in a position in a governmental agency, a not-for-profit organization, or a corporate firm which builds on previous instruction in the student's program of concentration in an area related to environmental matters. Students are assigned a specific project and work under the direct supervision of an employee of the governmental, non-profit, or business entity, as well as under the supervision of the instructor. Prerequisites: Environmental Studies 201, 202, and permission of the instructor. *Mr. H. Aay.*

395 Seminar in Environmental Studies.* S. This course aims to develop a Christian philosophy of the environment and environmental management. Problems, controversies, developments, issues, and research in environmental affairs are examined. These topics are studied through readings, student reports, and guest lecturers. Prerequisite sites: Environmental Studies 201 and 202 or permission of the instructor. *Mr. H. Aay.*

GEOGRAPHY

101 Introduction to Geography. F and S. A systematic overview of geography as a field of study: major paradigms, subfields, theories, theorists, concepts, techniques, and viewpoints. The course seeks to develop a geographic perspective on world and life. Principal topics for study include the physical earth, human ecology, and the spatial organization of society. *Mr. H. Aay.*

210 Introduction to Cultural Geography.* F. An examination of the interactions between culture and nature in pre-agricultural, agricultural, and urban-industrial societies. The course explores the origins, character, content, organization, perceptions, and meanings of cultural landscapes, past and present, large and small. Prerequisite: 101. *Mr. H. Aay.* Not offered 1985-86.

220 Urban Geography.* F. A study of the spatial organization of cities and systems of cities. Both the internal structure and external relations of cities receive attention. The historic and present-day spatial organization of infrastructure, economic life, social activities, ethnicity, institutions, and pol-

itics are examined. Prerequisite: 101 or one social science course. *Mr. H. Aay.*

GEOLOGY

100 Earth Science. F. An introductory study of four aspects of the earth: earth as a planet in the solar system; the structure and composition of earth's crust and interior; earth's atmosphere and weather processes; and the oceans. Laboratory. *Mr. C. Menninga.* Not offered 1985-86.

103 Man and the Earth. F and S, core. An introduction to geology. A study of the materials and processes of the earth leading to a responsible Christian appreciation for and use of the earth. The principles of geology are explored through a survey of the history of the ideas about the Earth. Basic insights of chemistry, biology, physics, and mathematics are applied to the solution of practical geological problems, with emphasis on such geological hazards as earthquakes, volcanic eruptions, floods, marine erosion, and mass wasting and on the nature and distribution of fossil fuels, metals, ground water, and other mineral resources. Laboratory. *Mr. J. Clark, Mr. C. Menninga.*

105 Introductory Field Geology. Summer. An introduction to geology through intensive field study. Students learn the basic principles of geology and become familiar with important earth materials and processes through firsthand observation of such features as the Cascade Range volcanoes, the Pacific Ocean coast, the Klamath Mountains, and the rivers and lakes of southern Oregon. Students live for about three weeks at a base camp located east of Ashland, Oregon, near the crest of the Cascades. Not open to students who have taken 103 or 151. Prerequisite: permission of instructor. *Mr. D. Young.* Not offered 1985-86.

151 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; and the earth as a representative planetary body in space. Laboratory. *Mr. J. Clark.*

152 Historical Geology. S, core. 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. Laboratory. Prerequisite: 105, 151, or 103 and permission of instructor. *Mr. C. Menninga.*

201 Mineralogy.* F. A study of the principles of crystal structure in minerals with emphasis on the silicates. Modes of geologic occurrence of minerals are reviewed. Crystal morphology and mineral identification are emphasized in laboratory. Laboratory. Prerequisites: 105 or 151 and Chemistry 103. *Mr. D. Young.*

202 Optical Mineralogy.* S, half course. This course treats the theory of polarized light transmission in minerals, the use of the polarizing microscope in the identification of minerals and determination of their optical properties, and the use of the universal stage. Laboratory. Prerequisite: 201. *Mr. C. Menninga.*

212 Structural Geology.* S. An analysis of common geological structures such as folds, faults, joints, and foliations; inquiry into the means by which these structures are formed from stresses within the earth; methods of constructing and interpreting geological maps and cross sections; introduction to field mapping techniques. Laboratory, field trip. Prerequisite: completion of or concurrent registration in 152. *Mr. J. Clark.*

301 Igneous and Metamorphic Petrology.* F. An investigation of the mineralogy, chemistry structure, texture, field associations, tectonic setting, and genesis of igneous and metamorphic rocks. The petrographic microscope is used extensively in the description and genetic interpretation of rocks. Laboratory. Prerequisite: 202. *Mr. D. Young.*

302 Sedimentology.* S. The study of sedimentary rocks. This course includes theories of depositional processes, lithification and diagenesis of sediments; classification of sedimentary rocks; comparisons of structures in modern deposits to those found in ancient rocks; and applications to fossil fuel industries. Laboratory, field trips. Prerequisite: 202. *Mr. J. Clark.*

304 Geochemistry.* F. The origins and history of the solar system, earth, crust and mantle, and various rock types in light of the distribution of the chemical elements and of stable and radioactive isotopes. Prerequisites: 201, 105 or 151 plus Chemistry 104, or permission of the instructor. *Mr. D. Young.*

311 Geomorphology.* F. The investigation of landforms and the processes which cause them. This course studies the erosional and depositional features resulting from rivers, glaciers, and wind, as well as coastal, gravitational, and weathering processes. Landforms are described and classified from field observations, topographic maps, and aerial photographs. Explanations of the landforms are offered through quantitative modeling of the processes. Laboratory, field trips. Prerequisite: 151. *Mr. J. Clark.*

313 Paleontology.* F. A study of organisms that once lived on the Earth. Includes study of the processes of fossilization and methods of discovering the structure, habitat, and relationships of those organisms, and a review of their distribution and life history. A broad spectrum of organisms is studied with emphasis on invertebrate animals. Prerequisite: 151 or Biology 202. *Mr. C. Menninga.* Not offered 1985-86.

314 Stratigraphy.* S. The fundamental principles of the classification and interpretation of rock strata are illustrated through intensive study of classic stratigraphic successions in the central Appalachians, the Colorado Plateau, Wyoming, and the British Isles. Laboratory, field trips. Prerequisite: 152. *Mr. D. Young.* Not offered 1985-86.

321 Glacial Geology, Quaternary Stratigraphy, and Climatic Change.* S. Study of the effects of ice sheets and colder climates of past ice ages upon the earth's surface. In this course glaciology (accumulation and flow of glaciers) and glacial geology (landforms due to glaciation) are studied, emphasizing the glacial stratigraphy of Michigan. An overview of deposits of Quaternary age throughout the world gives additional evidence for and understanding of previous ice ages. Theories of climatic change, as well as man's effect upon and response to climatic change, are also discussed. Field trips. Prerequisite: 311. *Mr. J. Clark.*

331 Geophysics.* F. An overview of physical methods used for determining properties of the earth's interior (solid earth geophysics) and for discovering economically important resources in the earth's crust (exploration geophysics). Topics in solid earth geophysics: heat flow and the earth's temperature distribution; gravity and the density profile and shape of the earth; magnetism

of the earth and paleomagnetism; anelastic properties and viscosity of the earth; and earthquake prediction. Topics in exploration geophysics: reflection and refraction seismology, gravimetry, resistivity, and well-logging techniques. Laboratory. Prerequisites: 151, Physics 124 or 126, Mathematics 162, or consent of the instructor. *Mr. J. Clark*. Not offered 1985-86.

390 Independent Study. *F,I,S, full or half course. Prerequisite: permission of department. *Staff*.

395-396 Research in Geology. *F, I, S, full or half course. Field and/or laboratory research on an approved geological problem and presentation of the results of the research in seminar. Open to qualified students by permission of the geology staff. *Staff*.

GRADUATE COURSES

520 Advanced Earth Science. This course includes consideration of the main ideas which serve as unifying principles in Earth science. Recent discoveries and current research projects are reviewed. The course highlights ideas resulting from studies in earth sciences which have increased our understanding of the relationship between the earth and its human inhabitants. Topics include applications of geology to environmental problems, contributions of space research to understanding the earth, and the relationship between the results of geological study and teachings of the Bible. Special attention is given to topics and concepts which can be incorporated into elementary, middle, and secondary school materials and activities. Prerequisite: Geology 100 or permission of department. *Staff*.

590 Independent Study (graduate). F,I,S. *Staff*.

595 Graduate Project. F,I,S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff*.

JANUARY 1986 INTERIM

W10 M & M's (Moon, Mars and Meteorites). This course is a review and consideration of present understandings of various features of some planetary objects in the solar system. The class is presented at popular level, assuming no training in science beyond general science level. Major topics are: surface features, composition, characteristics of atmospheres, history, and development. Lectures, readings, observations, some laboratory. A paper is required. *Mr. C. Menninga*.

W50 Geological Prospecting. Various methods and techniques of geological prospecting for economically valuable resources are studied. Emphasis is on petroleum and geothermal resources, with some consideration given to other resources. Discussion of the relationship between exploration methods and understanding of geological processes and structures constitutes an important part of the course. Some attention is given to approaches to solving exploration problems; which are likely to be successful, and which are not. Readings, lectures, possibly some laboratory work. A paper is required. Prerequisite: 212 or permission of the department chairman. *Mr. G. Van Kooten*.

IDIS W12 Our Daily Bread: Agriculture, Food and World Hunger. *Mr. H. Aay*.

German

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

PROGRAMS FOR STUDENTS wishing to major in German are worked out for them individually by departmental advisers who should be consulted early. To be

eligible a student must have completed at least two courses in German with a minimum grade of C (2.0) and must have completed 102, 122, or the equivalent.

The typical major requires ten courses in addition to the elementary courses and must include 123, 202, or the equivalent, 215, and at least two courses at the 300-level. Six-course minors must include 215. The nine-course teacher education major must include 215, 216, 250, and two 300-level courses. Students in this program must pass a German grammar test prior to the teaching internship, which is offered only during the spring semester. The teacher education adviser is Mrs. B. Carvill.

Calvin-sponsored programs are available in Germany and Austria for the interim, a semester, or an academic year. Students interested in such programs should work out the details with the chairman and the registrar.

The fine arts core may be met by German literature courses numbered 217 and above.

LANGUAGE

101 **Elementary German.** F. A beginner's course stressing both written and spoken German and including an introduction to German culture. *Staff.*

102 **Elementary German.** 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 but who, on the basis of a placement test, are not prepared for 201. The course is also open with the permission of the department to students in teacher education programs who have had no foreign language in high school. *Staff.*

201 **Intermediate German.** F, core. Grammar review, West and East German *Landeskunde*, readings, and continued emphasis on the development of spoken and written German. Prerequisite: 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. *Mr. C. Hegewald.*

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: 123 or 202. *Mr. J. Lamse.*

216 **Advanced Oral and Written Composition.** S. Continuation of 215. *Mrs. B. Carvill.*

LITERATURE

217 **Readings in Major German Authors.** S, core. Basic introduction to German literature. Selected readings in major German authors from 1750 to 1850. Prerequisite: 123 or 202. *Staff.*

218 **Readings in Major German Authors.** F and S, core. Readings in major German authors from 1850 to the present. Prerequisite: 123 or 202. *Mr. J. Lamse, Mr. W. Bratt.*

250 **German Civilization.** F, odd years, 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: 123 or 202. Not offered 1985-86.

301 **Classicism.*** S, even years. A study of the origins, nature, and literary manifestations of the classical ideal in eighteenth-century Germany. Readings from Lessing, Goethe, and Schiller. Prerequisite: 217, 218, or permission of the instructor. *Mr. J. Lamse.*

303 **Romanticism.*** S, odd years. The literary theory and philosophical-religious basis of the German romantic movement as reflected in representative works of both earlier and later Romanticists. Prerequisite: 217, 218, or permission of the instructor. *Mr. J. Lamse.*

304 **Realism.*** S, even years. Readings in German and Swiss literature 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: 217, 218, or permission of the instructor. *Mr. C. Hegewald.*

306 Literature of the German Democratic Republic.* F, even years. A survey of East German literature from its beginnings in the late 1940's to the present. The course includes an analysis of the relationship of the literature to the literary theories of Socialist Realism as well as to the political and social structure of the German Democratic Republic. Prerequisites: 217, 218, or permission of the instructor. *Mr. W. Bratt.*

307 Early Twentieth Century Literature.* F, odd years. Selected readings in German and Austrian literature from 1890 to 1940, with special emphasis on the works of Schnitzler, Mann, Kafka, Brecht, and Hesse. Lectures, discussions, and assigned papers. Prerequisite: 217, 218, or permission of the instructor. *Mrs. B. Carvill.*

308 Postwar Literature.* S, odd years. Readings in German literature from 1945 to the present from such writers as Andersch, Frisch, Böll, and Grass. Lectures, discussions, and assigned papers. Prerequisite: 217, 218, or permission of the instructor. *Mrs. B. Carvill.*

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.

CIVILIZATION

361 Introduction to Modern German Culture. F and S. 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 preprofessional courses whose programs include the "foreign culture" option. No knowledge of German is required. *Mr. W. Bratt.*

JANUARY 1986 INTERIM

W50 German Interim Abroad. This course is approximately five weeks in length and is

conducted in West and East Germany. A brief tour through Northern Germany is followed by ten days of study in Husum, Schleswig-Holstein. A second study-phase of the course is conducted in West Berlin, and is followed by a week in East Germany. Course participants will be given approximately a week for independent study and travel prior to returning to the United States. Satisfies departmental concentrations. Prerequisites: permission of instructor and German 215 or its equivalent. Fee of approximately \$1175. *Mr. W. Bratt.*

W52 Business German. Students will be introduced to the background knowledge and skills needed to enable them to engage in business dealings with individuals and institutions operating in the economy of the Federal Republic of Germany. In addition to dealing with material on the free market economy, banking, business administration, business management and employer/employee relations, students will learn about cultural patterns affecting German-American business interaction and will practice the vocabulary and structures of business communication. Lectures, readings, language laboratory exercises, drills, role-plays, field trips to local firms. Study materials available in December. Quizzes, reports, final examination. Prerequisite: 202 or equivalent. *Mr. J. Lamse.*

W53 Foreign Language Instruction in the Elementary School. Introduction to the methodology of teaching French, German, and Spanish on the elementary level. Students will attend lectures, visit existing foreign language programs and do a limited practicum in area elementary schools. Prerequisite: Spanish, French, or German 215. *Mrs. B. Carvill*

122 Introductory German. 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 but who, on the basis of a placement test, are not prepared for 201. The course is also open with the permission of the department to students in teacher education programs who have had no foreign language in high school. *Staff.*

IDIS W15 Nazi Germany. *Mr. C. Hegewald.*

Greek

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

History

*Professors R. Bolt (chairman), *H. Brinks, **B. De Vries, D. Diephouse, S. Greydanus, **G. Marsden, H. Rienstra, F. Roberts, D. Van Kley, E. Van Kley, R. Wells*
Assistant Professor L. Thornton
*Instructors **D. Miller, J. Ramsbottom*

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, European, or World History concentrations. One upper-level interim course may be included in the required 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. The World History concentration requires one course from 301–305 (from 301–302 if the student has taken 102), one course from 310–312, and at least four courses from 201, 202, 203, 204, 205, 206, 207, and 320. A 390 in a non-western field is also advised. The world history concentration is designed primarily for teacher education students. Other 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,

312 (or 211 plus either 355 or 356); 360, and two others. 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. One upper-level interim course may be applied to a minor concentration. Students seeking special advice on teacher education programs, including group majors for middle school teaching, should consult Mr. Samuel Greydanus.

The core requirement in history must be met by one course from 101, 102, or 102 Honors; any other regular course in the department will satisfy the additional requirements in the contextual disciplines. Upperclass students who have not completed their core requirements in history should discuss with the chairman alternative ways of satisfying the requirement.

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 antiquity through the sixteenth century. *Staff.*

102 Western Civilization. F and S, core. A study of the main cultural currents of Western Civilization with primary emphasis on the period since the Reformation. *Staff.*

102 Honors Western Civilization. F, core. A study of revolution and revolutionaries in Western civilization since 1500. Using case studies of various types of revolution (political, social, economic, cultural), the course will examine changing definitions of revolution and explore the historical impact of such figures as Calvin, Marx, and Freud. Lectures, discussion of assigned readings, and the preparation of several papers; no tests. *Mr. D. Diephouse.*

201 Ancient Near East.* F. A cultural history of the ancient Near East from prehistory to Alexander, 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. Not offered 1985-86.

202 Modern Near East.* F. 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 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.*

205 History and Society in West Africa to 1800.* F. A wide-ranging survey of prominent themes encompassing several centuries of West African history. The principal aim is to introduce students to some of the main currents of West African history and to provide insights into its society and culture. Themes include: pre-colonial times; culture, commerce, and state building; the trans-Saharan and Atlantic trade; Islam and the socio-political changes it brought; the Atlantic slave trade. Not offered 1985-86.

206 History and Society in West Africa since 1800.* S. An examination of the historical, political, and economic development of West Africa since 1800. The course examines European imperialism in the late nineteenth and twentieth centuries, the development of African nationalism, resistance and strug-

gle for independence, neo-colonialism, and the origins of contemporary social, economic, and political problems in the new states of the area. Not offered 1985-86.

207 **Latin America.*** F. A study of continuity and change in Latin America from Pre-Columbian times to the present. Topics covered include the melting of races and cultures in the Conquest Era, the long-term influence of colonial institutions, the paradox of economic development and continued dependency, the current struggle between forces of the Left and the Right, and the crucial role of the Roman Catholic church. *Mr. D. Miller.*

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.*

212 **England.*** S. 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. *Mr. H. Ippel.*

215 **Canada.*** F. A tracing of the founding and character of New France followed by a careful examination of nineteenth and twentieth century Canada. *Mr. S. Greydanus.*

218 **Russia.*** S. 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. L. Thornton.*

220 **France.*** F. 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. *Mr. D. Van Kley.*

221 **The Netherlands.*** S. An introduction to the history of the Netherlands from Medi-

eval times to the twentieth century, with an emphasis on Dutch colonization and the history of Dutch immigration in the U.S.A., Canada, and elsewhere. *Mr. H. Brinks*

223 **Germany.*** S. 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, and the rise of the Nazi movement. *Mr. F. Roberts.*

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. Classics 311 or 312 may substitute for this course. *Mr. B. De Vries, Mr. G. Harris.*

302 **Medieval Europe.*** 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. F. Roberts.*

303 **Renaissance and Reformation Europe.*** F. Studies in topics in European history from 1300 to 1650. Attention is given to such problems in intellectual history as the nature of humanism, the character of religious reform, and the rise of science. Requires readings in narrative 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. E. Van Kley, Mr. D. Van Kley.*

305 **Modern Europe.*** F and S. The history of Europe from the French Revolution to

World War I. Special attention is paid to social and cultural developments, including the rise of industrial society, ideologies and protest movements, nation-building, mass politics, materialism, and the *fin de siècle* revolution in art and thought. *Mr. D. Diephouse.*

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 the differing cultural values and institutions present in the colonies. This course is designed to serve as one of the American sequence and as an introduction to 355. *Mr. J. Ramsbottom, Staff.*

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.*

320 Contemporary World.* S. A topical analysis of twentieth century history, stressing Europe's place in a global civilization. Major themes include the growth of collectivism; the impact of mass democracy; the "international civil war"; the emergence of Third World societies; and the character of contemporary art, thought, and popular culture. *Mr. D. Diephouse.*

TOPICAL STUDIES

334 United States Constitutional History.* 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 interrelationship 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. Not offered 1984-85.

351 English Constitutional History.* F. A study of the origins and subsequent developments of English law, legal institutions and constitutional usage 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 and Cultural History of the United States.* F. An analysis of the changing intellectual patterns in American society 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.*

380S Field Work in Middle East Archaeology. Summer, 1986. An on-site introduction to archaeological field work in the Middle East designed to expose the student to the methodologies involved in stratigraphic excavation, typological and comparative analysis of artifacts, and the use of nonliterary sources in the writing of Middle East

history. Prerequisite: consent of the instructor. *Mr. B. De Vries.*

390 **Independent Study.** F,I,S. *Staff.*

395 **Seminar in History.*** F and S, honor sections. A course in historiography, the philosophy of history, historical bibliography, and the writing of history. *Staff.*

GRADUATE COURSES

571 **Studies in History:** Students will engage in a concentrated investigation of a particular topic or period of history. Advanced reading and discussion of the source materials, literature, problems, interpretations, and more recent findings on a selected period or topic are included. Topic will be selected each time the course is offered. *Staff.*

580 **Resources for Teaching History and the Social Studies.** An exploration of research in the various approaches to the teaching of history and the social studies on the secondary level. Course requirements include the development of a bibliography of resources for the teaching of history and the social studies which students will relate to the curriculum and philosophy of social studies teaching from a Christian perspective. *Mr. S. Greydanus.*

581 **Historiography.** The course focuses on historical writing as reflective of different personal and cultural styles and on the role of history in the intellectual adventure of man. Historians will be studied to determine their diverse opinions and interpretations. The focus is on understanding historical writing so that it can be taught more effectively. *Staff.*

590 **Independent Study.** F, I, S. *Staff.*

595 **Graduate Project.** F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

JANUARY 1986 INTERIM

W14 **Tomahawks, Peace Pipes, Wampum: Native American Leaders in War and Peace. A Biographical Study.** The students will become acquainted with a select number of important Native American heads of government and leaders in various periods of North American history through

the reading of biographies. Such persons could include: Hiawatha, King Philip, Pontiac, Tecumseh, Osceola, Black Hawk, Crazy Horse, Chief Joseph, Chief Poundmaker, and Black Elk. Class discussion, films, and a research paper. *Mr. S. Greydanus.*

W15 **Christian Missions in China.** A study of the two major waves of missionary activity in China since 1500, the culture which the missionaries found there, the problems it posed for Christian missions, the goals and tactics of the missionaries, and the results of their efforts. In addition to lectures and discussions by the instructor there are discussions with former missionaries, readings, student reports, and an examination. *Mr. E. Van Kley, Mr. E. Van Baak.*

W50 **Through A Lens Darkly: Film and the Holocaust.** This course deals with the portrayal of the Nazi War against the Jews (L. Dawidowicz) in European and American films since the 1930s. The major aim is to assess the strengths and weaknesses of film as a medium for re-creating and reflecting upon historical experience, with special attention to problems of moral perspective and the value of various genres—drama, black comedy, the personal documentary—as vehicles for confronting the meaning of the Holocaust. Viewing and discussion of selected films is complemented by assigned readings in history, film criticism, and literature. Written work includes one or more quizzes, a personal viewing diary, and a summary paper. Prerequisite: 102 or permission of the instructor. Fee of approximately \$25. *Mr. D. Dielhouse, Mr. F. Roberts.*

W54 **Humanism and Religion: The Case of John Calvin.** Humanism is a clearly defined characteristic of the intellectual and religious life of Europe in the fifteenth and sixteenth centuries. Some Protestant Reformers were educated in the humanist tradition and are often referred to as humanists. John Calvin is one of these. This course examines the historiographical tradition behind this designation to determine the appropriateness of calling Calvin a humanist. Each student will be required to do extensive reading in a particular part of the corpus of Calvin's writings—letters, sermons, commentaries, or treatises—and to write a term paper on whether those writings provide evidence on the question of whether Calvin

was a humanist. The grade in the course is based on class participation and the term

paper. Prerequisite: 303 or Religion 206. Mr. R. Rienstra.

Latin

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

Mathematics

*Professors P. Boonstra, D. Brink, T. Jager (chairman, Department of Mathematics and Computer Science), G. Klaasen, J. Kuipers, D. Laverell, S. Leestma, **L. Nyhoff, C. Sinke, G. Van Zwalenberg, G. Venema, P. Zwier*
Associate Professor M. Stob
Assistant Professors V. Nyhoff, G. Talsma
Instructor G. Adams

A MINIMUM GRADE OF C (2.0) in a 200-level mathematics course is required for admission to a program of concentration in the department. The program consists of 161, 162, two 200-level courses, two semesters of 391, an approved interim, and at least four additional 300-level courses. Each program must include a two-course sequence at the 300-level, a course in algebra, a course in analysis, a course emphasizing applications, and a course emphasizing formal proof. Computer Science 151 is a required cognate, and a second course in computer science is recommended. Students with deficiencies in high school algebra or trigonometry should take 110 before enrolling in 161. A minor consists of 161, 162, two 200-level courses, and two 300-level courses. Computer Science 151 is a recommended cognate.

Students preparing to teach mathematics at the secondary level complete a major program with an emphasis on algebra, analysis, or probability and statistics. Such majors require 161 and 162. The remaining seven 200- and 300-level courses are selected with the approval of the student's adviser. Education 356 substitutes for the 391 required in other major programs. The teacher education minor consists of 161; 162; one from 243, 261, or 361; 251 or 351; 321; and one additional 300-level course.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. These majors are not appropriate for students who anticipate attending graduate school or who are in teacher education programs. Such group majors require twelve courses in the sciences and mathematics, ten of which must be from two departments with no fewer than four from either, with the remaining two courses chosen from a third department. The chairmen of the three departments must approve each program of this type. Group concentrations involving economics, philosophy, and other departments are possible on an individual basis.

The core requirements in mathematics may be met by 100, 121, 131, 151, or 161.

100 Elements of Modern Mathematics. F and S, core. An introduction to the content, methodology, and history of mathematics. Among the topics which may be covered are cardinal numbers and set theory, axiomatic systems, probability theory, computer programming, groups and fields, and number theory. Prerequisites: a year of high school algebra and geometry. *Staff.*

110 Elementary Functions. F. A course in elementary functions to prepare students for the calculus sequence. Topics include the properties of the real number system, inequalities and absolute values, functions and their graphs, solutions of equations, polynomial functions, trigonometric functions, exponential and logarithm functions. Prerequisite: two years of high school mathematics. *Staff.*

121 Fundamental Concepts in Mathematics: The Real Number System. F and S, core. This course gives the prospective elementary teacher an exposure to elementary mathematics from a more advanced standpoint. It considers the methodology of mathematics as well as the historical development of the real number system. Other topics considered are logic, sets, axiomatic systems, groups, and number theory. Students may not receive credit for this course and for 100. Prerequisites: a year of algebra and of geometry in high school. *Mr. G. Tal-sma.*

131 Finite Mathematics, Probability, and Statistics. F and S, core. Topics include a review of algebra, matrix theory, systems of linear equations, linear programming, elementary probability theory, decision theory, descriptive statistics, regression analysis, and statistical inference. The student is introduced to the use of the computer in statistical computations by means of the MINITAB statistical package. Intended for

students other than mathematics and science majors. Prerequisite: two years of high school mathematics. *Staff.*

132 Calculus for Management, Life, and Social Sciences. F and S. Functions, limits, derivatives. Applications of derivatives to maximum-minimum problems. Exponential and logarithm functions. Integrals. Functions of several variables. The course includes a short module on computer programming using BASIC and use will be made of programming at appropriate points in the course. Not open to those who have completed 161. Prerequisite: 131 or permission of instructor. *Staff.*

143 Elementary Statistics. S. An introduction to the concepts and techniques of statistics, designed for students with limited mathematical background. Topics include descriptive statistics, elementary probability theory, random variables and probability distributions, binomial and normal distributions, sampling distributions, estimation, hypothesis testing, regression and correlation, analysis of variance, non-parametric methods. The student is also introduced to use of the computer in statistical computations and simulations by means of statistical packages such as MINITAB and SPSS. No prior knowledge of computing is required. Prerequisite: two years of high school mathematics. *Staff.*

151 Discrete Mathematics for Computer Science. F and I, core. An introduction to the topics of discrete mathematics necessary for the study of computer science. Topics include the natural number system, sets, relations, Boolean algebras, combinatorics, sequences and recurrences, graphs, and trees. *Mr. M. Stob, Mr. P. Zwier.*

161 Calculus I. F, I, and S, honors section, core. Functions, limits, derivatives, applica-

tions of derivatives, integrals, exponential and logarithmic functions. Prerequisite: high school mathematics through trigonometry or 110. *Staff.*

162 Calculus II. F and S, honors section. Trigonometric functions, techniques of integration, applications of integrals, sequences and series. An introduction to partial derivatives and multiple integrals. Prerequisite: 161. *Staff.*

231 Differential Equations with Linear Algebra. F and S. Solutions and applications of first and second order ordinary differential equations. Elementary linear algebra. Higher order linear equations, systems of linear differential equations, numerical methods, non-linear equations. Prerequisite: 162 and experience in computer programming. *Staff.*

243 Statistics. F and S. Data collection, random sampling, experimental design, descriptive statistics, probability, random variables and standard distribution, Central Limit Theorem, statistical inference, significance tests, point and interval estimates, and simple linear regression. The student is introduced to the use of the computer in statistical computations and simulations by means of statistical packages such as MINITAB and SPSS. Prerequisite: 162. *Mr. P. Zwier.*

251 Discrete Structures. F. An introduction to various discrete mathematical structures. Topics include sets and binary relations, graphs, algebraic structures, lattices, and Boolean algebras. Combinatorics, algorithms, and abstract computers (Turing machines) are also considered. Also listed as Computer Science 251. Prerequisites: a programming course and 132 or 161. *Mr. L. Nyhoff.*

255 Applied Linear Algebra. F and S. Matrices, row operations, systems of linear equations, pivoting strategies, vector spaces, linear independence, dimension, orthogonality, determinants, eigenvectors and eigenvalues. Emphasis on computations with matrices. Prerequisites: 162 and experience in scientific computer programming. *Mr. D. Brink.*

261 Multivariate Calculus. F and S. A study of vectors and functions in two and three dimensions. Polar, cylindrical, and spherical coordinate systems. Partial derivatives, multiple integrals, vector functions, vector analysis. Prerequisite: 162. *Staff.*

321 Foundations of Geometry.* S. Consideration of Euclidean geometry as an axiomatic system, introduction to non-Euclidean geometry, the Poincare model. Prerequisite: a 200-level course. *Staff.*

325 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: a 200-level course. Not offered 1985-86.

333 Advanced Calculus for Applications.* 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. Prerequisites: 231 and 261. *Mr. G. Van Zwalenberg.*

335 Numerical Analysis.* S. Analysis of errors in numerical methods, real roots of equations, approximations using polynomials, numerical integration, applications to differential equations, Lagrange and spline interpolation, least squares approximations, orthogonal polynomials, and applications. Also listed as Computer Science 335. Prerequisites: Computer Science 141 or 151 and Mathematics 255, or permission of the instructor. *Staff.*

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: 261 or 362. *Mr. M. Stob.*

344 Mathematical Statistics.* S. A continuation of 343 including theory of estimation, hypothesis testing, nonparametric methods, regression analysis, and analysis of variance. Prerequisite: 343. *Mr. M. Stob.*

351 Abstract Algebra.* F. Set theory, relations and functions, equivalence relations; the integers, mathematical induction, and elementary number theory; groups, rings, fields, and polynomials. Prerequisites: two 200-level courses. *Mr. P. Zwier.*

352 Advanced Linear Algebra.* S. Vector spaces, matrices, linear equations, linear transformations, determinants, polynomial algebras, eigenvalues and eigenvectors, inner-product spaces, spectral decomposi-

tions, canonical forms for matrices. Prerequisite: 351. *Mr. P. Zwier.*

361 Real Analysis I.* F. The real number system, set theory, the topology of metric spaces, numerical sequences and series, real functions, continuity, differentiation, and Riemann integration. Prerequisites: two 200-level courses. *Mr. G. Klaasen.*

362 Real Analysis II.* S. A continuation of 361. Sequences and series of functions, functions of several variables, Lebesgue integration. Prerequisite: 361. *Mr. G. Klaasen.*

365 Complex Variables.* S. Complex numbers, complex functions, integration and the Cauchy integral formula, power series, residues and poles, conformal mapping. Prerequisite: 261 or 362. *Staff.*

381 Advanced Logic.* F. Topics include the formalization of propositional and quantificational logic. Taught jointly with the Philosophy Department and also listed as Philosophy 381. Not offered 1985–86.

385 General Topology.* F. 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: 261 or 362. *Mr. S. Leestma.*

390 Independent Study.* 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.*

391 Colloquium. F and S, quarter course. Meets weekly for an hour for the presentation of various topics in mathematics, computer science, and related disciplines by students, faculty, and visiting speakers. Prerequisites: two 200-level courses. *Mr. G. Venema.*

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.*

GRADUATE COURSES

510 Advanced Geometry for Teachers. A study of geometry from the point of view of groups of transformations, including con-

siderations of isometries, translations, glide reflections, and similarities. Applications to theorems in Euclidean geometry. Consideration of affine, projective, hyperbolic, and elliptic geometries, and models for each. Prerequisite: 321 or its equivalent. *Staff.*

512 Philosophy and Foundations of Mathematics. A study of the philosophical problems which arise in the context of mathematics; logicism; intuitionism and formalism; metamathematics and the theorems of Gödel, Church, and Tarski; some philosophical implications of these theorems. Some attention is paid to the philosophical stance of materials and texts written for the classroom. Prerequisite: undergraduate mathematics minor or permission of instructor. *Staff.*

513 Real Analysis and Topology for Teachers. Construction of the real number system; metric space topology with applications to Euclidean spaces, limits, continuous functions, differentiation, and Riemann Stieltjes integration. Prerequisite: 261. *Staff.*

580 Advanced Methods and Materials in Secondary School Mathematics. A study of methods which can be used to teach mathematics in the junior and senior high school. Consideration is also given to materials, both commercial and teacher-made, which can be used to teach mathematics. Prerequisite: mathematics minor or major. *Staff.*

590 Independent Study. F, I, S. *Staff.*

595 Graduate Project. F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

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W11 Mathematics and Culture. The impact of culture on mathematics and of mathematics on culture is the main theme of the course. Certain historical facts of importance to the development of fundamental concepts of mathematics are considered. Important and interesting mathematical concepts are developed and explained. The topics considered fall within the range of a liberal arts course in mathematics: history of mathematics, number systems, axiom systems, the world through simple equations, algebraic and transcendental numbers, infinite sets. Problems, tests, and optional

readings. Prerequisites: a year of high school algebra and geometry. Satisfies mathematics core. Not open to those who have taken or expect to take 100. *Mr. G. Van Zwahlenberg.*

W52 Number Theory, Computers, and Cryptology. This course attempts to integrate the fundamental concepts in classical number theory with their modern-day computer applications. Particular attention is paid to those areas of number theory that are of major importance in computer implementation; in particular to factoring and primality. Recent applications getting attention in the news media are those in cryptology and in computer security. The textbook devotes an entire chapter to such. There are two major aspects of the course. First, there are lectures in classical number theory which are given in the usual mathematical style of careful definition and proof. Students will be assigned problems whose solutions require mathematical argumentation and proof. Second, computational problems are assigned which illustrate the theoretical material. Emphasis is also placed on the using of a computer to investigate patterns and to help in the formulations of conjectures; in short, participants hope to illustrate how computers can be used to do research in number theory. A course project is assigned, and students will give a class report on their projects. Prerequisites: a course in computer programming or equivalent master of a language. PASCAL, BASIC, FORTRAN are preferred. Students are also required to have taken three courses in college mathematics. *Mr. P. Zwier, Mr. D. Laverell.*

W53 Optimization; Linear and Dynamic Programming. This course surveys the standard procedures and problems in linear and

dynamic programming. Background material from linear algebra is discussed first. The simplex method, the revised simplex method, and the duality problems from linear programming are carefully developed. Applications of the simplex method and its extensions include the general transportation problem, production scheduling and inventory control problems, diet problems, network flow problems, and others. Topics from dynamic programming include one dimensional allocation problems, where Bellman's Principle of Optimality is introduced; multidimensional allocation problems, and perhaps smoothing and scheduling problems. If time permits some discussion of selected topics in discrete event simulation are included. Computer programming projects written in Pascal or Fortran are required. Satisfies the interim requirement for mathematics majors. Prerequisite: 231 or 255, or 352. *Mr. D. Brink.*

W56 Mathematical Modeling. Mathematical modeling is a procedure which translates assumptions about a problem, situation, or phenomenon into mathematical terms and then analyses the problems using mathematical tools. Although modeling in the physical sciences has had a long and illustrious history, only recently have serious attempts been made in modeling in the social, biological, and environmental sciences, this course examines the interplay between applied problems and mathematical theories. Students will become involved in their own model building through class and group projects. This course is appropriate for any science student. Prerequisite: 161 and 162, or permission of instructors. *Mr. T. Jager, Mr. G. Klaasen.*

IDIS W19 Railroad in American History.
Mr. C. Sinke.

Music

Professors J. Hamersma, H. Slenk (chairman), C. Stapert, D. Topp, J. Worst
Associate Professors D. De Young, G. Huizenga, C. Kaiser, R. Rus
Assistant Professor M. Mustert

STUDENTS MUST COMPLETE 103, 104, 114, and 124 with a minimum grade of C (2.0) in each for admission to a music major concentration. Applicants will be

informed of the department's action within a month after completing these courses. Various concentrations are offered by the department.

Programs for students preparing for graduate work in music. Students preparing for graduate study in music must take 103, 104, 113, 114, 123, 124, 203, 204, 213, 214, 223, 224, 303, and 304; 121, 131, 141, 161, or 171 each semester; 180 each semester; and four additional courses from one of the following areas of specialization: *music history*, 311, 312, 313, and approved interim courses; *theory-composition*, 311, 312, and two from 315, 316, 317; or *applied music*, eight semesters from 210, 220, 230, 240, 260, or 270, including a solo recital.

Programs for students preparing to teach in the schools. Students desiring to teach music in the schools can choose one of three programs. Two thirteen-course concentrations enable graduates to teach music in grades k-12. These programs, with a primary emphasis on the secondary level, require 103, 104, 113, 114, 123, 124, 203, 204, 213, 223, 237, 303, 304, and 339; 180 each semester: plus four and one half course units from one of the following concentrations: *instrumental music*, 195, 196, 197, 198, 337, four semesters of 140, 150, 160, or 170; and four semesters of 161 or 171; *vocal music*, 214, 224; 313 or an approved interim; 338; two semesters of 110 or 120; four semesters of 130; and four semesters of 131 or 141. In addition to this thirteen-course concentration in music, these students complete five additional cognates from core and professional education to fulfill state certification requirements for both a major and a minor in music. However, these students are also advised to complete a minor in another department, if possible. The cognates include a core history course, a core fine arts literature course (if the history course is broad in coverage as in 101 or 102, it is recommended that the literature course focus more intensely on a narrower time frame), Philosophy 208 (Note: This course counts as the sixth course in the contextual disciplines for secondary music majors), Music 302 (a substitute for Education 303), and Music 356 (a substitute for Education 356). This is also the appropriate program for students interested in doing graduate work in music education.

A ten-and-one-half course concentration qualifies graduates to teach in a regular elementary classroom and to teach music in grades k-8. The program requires 103, 104, 113, 114, 123, 124, 203, 204, 233, 237, 339; 180 each semester; and three and one-half additional courses from one of the following concentrations: *instrumental music*, 195, 196, 197, 198, three semesters of 140, 150, 160, or 170; two semesters of 161 or 171; and one semester from among 110, 120, or 130; *vocal music*, two semesters of 110 or 120; three semesters of 130; two semesters of 131 or 141; one course from 311-319; and three-fourths course elective from 213, 214, 223, 224, or applied music. Fine Arts Studies majors and minors are available for students who wish fewer courses in music.

The seven-course music minor can be used for either an elementary or secondary teaching certificate. It requires 103, 113, 123, 233, 234, 237, 339; two semesters of 110 or 120; two semester of 130, two semesters of 131, 141, 161, or 171; and one course elective in music.

Programs for students interested in church music. Students preparing for work in church music must take 103, 104, 113, 114, 123, 124, 180, 203, 204, 213, 214, 223,

224, 236, 237, 303, 304, and five and a half course units in one of the following areas: *organ*, 110 (first two semesters), 210 (six semesters including some directed field work and a public recital with scores), 130 (two semesters), 131 or 141 (two semesters), and an interim in church organ music; *choir*, 130 (six semesters), 110 or 120 (two semesters), 131 or 141 (six semesters), 337, 338, and an interim in church choir music which includes some directed field work and a public choral recital.

A six-course minor in church music includes 103, 113, 123, 236, 237, and three additional course units in organ or choir. The organ group requires six semesters of 110; 130; 131 or 141; and an interim in church organ music. The choir group requires four semesters of 130, two semesters of 131 or 141, two semesters of 110 or 120, and an interim in church choral music.

Programs for students interested in keyboard pedagogy. Students preparing for keyboard teaching must take 103, 104, 113, 114, 123, 124, 180, 203, 204, 213, 214, 233, two semesters in a faculty-directed ensemble, and four courses in one of the following areas: *piano*, 120 (four semesters), 220 (four semesters, including a half solo recital during the senior year), and an independent study in piano pedagogy; *organ*, 110 (four semesters), 210 (four semesters, including a half solo recital during the senior year), and an independent study in organ pedagogy.

Programs for students with a liberal arts interest in music. A nine-course general education program is available for students not expecting to teach or to enter graduate school. This program includes 103, 104, 203, 204, 113, 114, 123, 124, and may be completed by either 233, one course in applied music, and two non-applied electives or by 303, 304, one course in applied music, and one non-applied elective.

General regulations and advisers. The adviser for applied music majors is Mrs. Ruth Rus and the adviser for music education programs is Mr. Dale Topp. All transfer students must consult Mr. John Hamersma at their first registration for an evaluation of their transfer credits in music and to receive counseling into the appropriate sequence of music courses. During their first semester at Calvin, such students must validate their transfer credits in keyboard harmony with Mrs. Marilyn Slenk and in aural perception with Mrs. Ruth Rus. Those not meeting minimum standards will be required to enroll in 113 or 123.

Core courses in music. The fine arts core requirement may be met in several ways. Students with a minimal musical background may prefer 133, 236, 238, or 241. Students with greater musical background should take 233, 234, or possibly, 103. Because 103 satisfies the core requirement and is the initial course in all concentrations involving music, freshmen considering any of these programs should take 103 along with 113 and 123, both quarter courses, which are also part of such programs.

GENERAL AND CORE COURSES

133 The Enjoyment of Music. F and S, core. An introductory course in music listening for students of any class level with any sort of background in music. Following

a two-week introduction for all students, each student will elect four three-week units from the list that appears below. Each unit consists of eight classroom presentations and discussions plus a final test. Each unit will be completed before the next begins.

Students will do listening and reading assignments. Topical units will be chosen from: oratorio, symphony, program music, opera, pre-Baroque music, instruments of the orchestra, church music, the *avant garde*, choral music, and solo songs. *Mr. C. Kaiser, Mr. D. Topp, and staff.*

233 History of Music I. * F, core. A survey of the stylistic development and the cultural context of the art of music in Western civilization. The course begins with an introduction to musical thought and practice in antiquity and the early Christian era followed by a study of Gregorian chants and the principal repertoires of polyphony through the Baroque period. *Mr. C. Stapert.*

234 History of Music II. * S, core. A survey of the stylistic development and the cultural context of the art of music in Western civilization from the Classical period to the present. The class will study representative works of major composers. *Mr. C. Stapert.*

236 The Enjoyment of Church Music. F, core. How is music useful to the church, what ought one to listen for in church music, by what criteria should church music be judged, how is one to worship by means of music, and how is church music to be enjoyed? Lectures, discussions, readings, record listening, and church services. Open to freshmen. *Mr. J. Hamersma.*

241 American Popular and Traditional Music. F and S, core. A survey of five basic genres of popular American music showing their roots in European art music and in American folk music, particularly in country music, folk music, blues and jazz, popular music theater, and rock. *Mr. J. Worst.*

BASIC COURSES

103 Materials of Music I. F, core. A course in the development of the ability to grasp and ~~note~~ ^{analyze} the rhythmic, melodic, and harmonic elements of music. Students anticipating any concentration involving music must take 113 and 123 concurrently. See note above concerning the use of this course to meet fine arts core requirements. *Mrs. G. Huizenga, Mr. H. Slenk.*

104 The Literature and Materials of Music II. 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 late Baroque and of the Classical eras. Students intending to major in music must take 114 and 124 concurrently. Prerequisite: 103. *Mrs. G. Huizenga.*

113 Keyboard Harmony I. F, quarter course. A course in the development of the ability to play at the keyboard the rhythmic, melodic, and harmonic elements of music. The student is required to play all the major, minor, and modal scales as well as easy chord progressions using all the diatonic triads in root position and some in first and second inversion. To be taken concurrently with 103. Prerequisite: piano skills. Others will be required to take remedial piano. *Mrs. M. Slenk.*

114 Keyboard Harmony II. S, quarter course. A continuation of 113. The student is required to play progressions involving seventh chords in their various inversions, to demonstrate the ability to use secondary dominants at the keyboard, and to modulate to closely related keys by means of common chord and chromatic modulation. *Mrs. M. Slenk.*

123 Aural Perception I. F, quarter course. A course in the development of the ability to hear and to sing at sight the rhythmic, melodic, and harmonic elements of music. Rhythmic perception involves all note values and rests in various combinations, with an emphasis on duplet and triplet contrasts. Melodic perception involves all intervals smaller than an octave above and below a given note. Harmonic perception involves the major and minor triads in root position, first inversion, and second inversion as well as augmented and diminished triads. To be taken concurrently with 103. *Mrs. R. Rus.*

124 Aural Perception II. S, quarter course. A continuation of 123. Rhythmic perception in this course involves the use of ties and syncopation, melodic perception involves the intervals between the octave and the twelfth including one and two-part melodic dictation, and harmonic perception involves the dominant seventh chords as well as harmonic dictations using the chords and triads studied in 123. *Mrs. R. Rus.*

203 The Literature and Materials of Music III. F. A continuation of 104. A study of the music of the Romantic era. Prerequisite: 104. Students whose programs require 213 and 223 must take those courses concurrently. *Mr. J. Worst.*

204 **The Literature and Materials of Music IV.** S. A continuation of 203. A study of post-Romantic and Contemporary music. Assignments include composition, analysis, a book review, instrument building, and possibly some live performing. Prerequisite: 203. Students whose programs require 214 and 224 must take those courses concurrently. *Mr. J. Worst.*

213 **Keyboard Harmony III.** F, quarter course. A continuation of 114. To be taken concurrently with 203. Prerequisite: 114. *Mrs. M. Slenk.*

214 **Keyboard Harmony IV.** S, quarter course. A continuation of 213. *Mrs. M. Slenk.*

223 **Aural Perception III.** F, quarter course. A continuation of 124. To be taken concurrently with 203. Prerequisite: 124. *Mrs. R. Rus.*

224 **Aural Perception IV.** S, quarter course. A continuation of 223. *Mrs. R. Rus.*

237 **Conducting.** S, half course. A course in basic, general conducting, normally taken in the sophomore year. Prerequisite: 103. *Mr. M. Mustert.*

303 **The Literature and Materials of Music V.*** F. A continuation of 204. A study of Western music prior to 1500. Prerequisite: 204. *Mr. C. Stapert.*

304 **The Literature and Materials of Music VI.*** S. A continuation of 303. A study of the Western music of the late Renaissance and early Baroque eras. Prerequisite: 303. *Mr. J. Hamersma.*

ADVANCED COURSES

311 **Vocal Polyphony of the Renaissance.*** S. A study of the vocal style of Palestrina. Exercises in modal counterpoint. Listening repertory of compositions. Prerequisite: 303. *Mr. J. Hamersma.* Not offered 1985-86.

312 **Instrumental and Vocal Polyphony of the Late Baroque.*** S. A study of contrapuntal practice of late Baroque composers, principally J. S. Bach. Exercises in tonal counterpoint. Listening repertory of compositions. Prerequisites: 304 or 104 and 233. *Mr. H. Slenk.*

313 **Studies in Music History: Haydn and Mozart.*** F. An intensive study of selected

works by Haydn and Mozart. Prerequisite: Music 203. *Mr. C. Stapert.*

315 **Arranging, Orchestration, and Scoring.*** F. 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. Projects written by class members will be performed by department organizations whenever possible. Prerequisite: 104. *Mr. J. Worst.*

316 **Arranging, Orchestration, and Scoring.*** S. Continuation of 315, which is prerequisite. *Mr. J. Worst.*

317 **Composition.*** F and S. Writing in contemporary forms and according to contemporary practice. Prerequisite: 104 or permission of the instructor. May be repeated for credit as often as a student's schedule allows. *Mr. J. Worst.*

337 **Instrumental Conducting.*** F, half course. A course in advanced conducting techniques appropriate to bands and orchestras. Prerequisite: 237. *Mr. D. De Young.* Not offered 1985-86.

338 **Choral Conducting.*** F, half course. A course in advanced conducting techniques appropriate to choirs. Prerequisite: 237. *Mr. H. Slenk.* Not offered 1985-86.

390 **Independent Study.** *Staff.*

MUSIC EDUCATION

238 **Elementary School Music.*** F and S, core. 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 339 is required of elementary music education majors.) Not open to freshmen. *Mr. D. Topp.*

302 **Introduction to Music Teaching.*** F and S. An analysis of the teaching-learning process in the classroom. The course includes observation and participation in school activities and a laboratory experience to develop competence in the classroom use of audio-visual equipment. This course substitutes for Education 303 for secondary music education students and must be taken concurrently with Education 301. The in-school experience will be divided equally between traditional classroom and music teaching. *Mr. D. Topp.*

339 **School Music.** *F, half course. A study of the philosophy, methods, and materials for teaching elementary and secondary school music. This course is required of secondary music education majors and minors and is also open to other elementary education majors with a background in music. *Mr. D. Topp.*

356 **Seminar in Music Methods.** S. A seminar taught in conjunction with Education 346 involving general problems of pedagogy as well as the specific methods for teaching music in rehearsal and classrooms. The seminar provides a forum for the discussion of problems that develop during directed teaching. *Mr. D. Topp.*

APPLIED MUSIC

Not more than two course units of credit in applied music and drama may be applied to the minimum requirements for graduation unless the addition is part of a designated major or minor music concentration. See fees on page 27.

INDIVIDUAL LESSONS

At least twelve lessons a semester are required and students taking individual lessons must also register for 180.

100 **Harpichord.** Quarter course. *Mrs. E. Farr.*

110 **Organ.** Quarter course. Individual lessons in organ emphasizing skills for the church organist. *Mrs. S. Boomsma, Mr. J. Hamersma.*

120 **Piano.** Quarter course. Individual lessons in piano. *Mrs. K. Henry, Miss S. Kleinhuizen, Mrs. B. Mustert, Mrs. R. Rus, Mrs. L. Vanden Berg.*

130 **Voice.** Quarter course. Individual lessons in voice. *Mrs. T. Haan, Mrs. J. Herzberg, Mrs. G. Huizenga, Mr. C. Kaiser.*

140 **Brasses.** Quarter course. Individual lessons in trumpet, horn, euphonium, trombone, or tuba. *Mr. M. Bowman, Mr. D. De Young, Miss M. Gage.*

150 **Percussion.** Quarter course. Individual lessons in snare drum, tympani, and other percussion instruments. *Mr. D. Gross.*

160 **Strings.** Quarter course. Individual lessons in violin, viola, violoncello, bass viol, or classical guitar. *Mr. A. Emerson, Mr. R. Harbaugh, Mr. L. Herzberg, Mr. K. Matsuda, Mr. P. Vondiziano.*

170 **Woodwinds.** Quarter course. Indi-

vidual lessons in flute, oboe, clarinet, bassoon, saxophone, or recorder. *Mr. R. Bylsma, Mr. M. Colley, Mr. M. Kornacki.*

210 **Advanced Organ.** Half course. Individual lessons for the music major concentrating in organ. *Mr. J. Hamersma.*

220 **Advanced Piano.** Half course. Individual lessons for the music major concentrating in piano. *Mrs. R. Rus.*

230 **Advanced Voice.** Half course. Individual lessons for the music major concentrating in voice. *Mr. C. Kaiser.*

240 **Advanced Brasses.** Half course. Individual lessons for the music major concentrating in trumpet, horn, euphonium, trombone, or tuba. *Mr. D. De Young.*

260 **Advanced Strings.** Half course. Individual lessons for the music major concentrating in violin, viola, violoncello, bass viol, or classical guitar. *Staff.*

270 **Advanced Woodwinds.** Half course. Individual lessons for the music major concentrating in flute, oboe, clarinet, bassoon, saxophone, or recorder. *Staff.*

CLASS LESSONS

180 **Repertory Class and Studio Classes.** F and S, weekly, 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.*

195 **String Methods.** F, half course. Class lessons on all string instruments for the instrumental music education major. Emphasis is on the methods for teaching string instruments. Elementary playing skills are developed. *Mrs. M. De Young.*

196 **Brass Methods.** S, half course. Class lessons on all brass instruments for the instrumental music education major. Emphasis is on the methods for teaching brass instruments. Elementary playing skills are developed. *Staff.*

197 **Percussion Methods.** F, half course. Class lessons on percussion instruments for the instrumental music education major. Emphasis is on the methods for teaching percussion instruments. Elementary playing skills are developed. *Mr. D. Gross.* Not offered 1985-86.

198 **Woodwind Methods.** S, half course. Class lessons on all woodwind instruments for the instrumental music education major. Emphasis is on the methods for teaching woodwind instruments. Elementary playing skills are developed. *Staff.* Not offered 1985-86.

ENSEMBLES

Membership in ensembles is limited to Calvin students except when there is a specific need and the non-student is not replacing a student.

101 **Men's Choir.** F and S, no credit. Open to general college students. Not offered 1985-86.

111 **Women's Choir.** F and S, no credit. Open to general college students. *Mrs. H. Van Wyck.*

121 **Collegium Musicum.** F and S, quarter course. An ensemble of singers and instrumentalists devoted to the performance of medieval, Renaissance, and Baroque music. Open to all students who meet the requirements of instrumentation and the demands of musicianship. Collegium can also include various other small, faculty-directed ensembles such as string quartet, woodwind quintet, flute choir, trombone choir, and jazz band. These are open to members of band and orchestra who meet the requirements of instrumentation and the demands of musicianship. *Mrs. R. Bylsma, Mr. D. De Young, Mr. C. Stapert.*

131 **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.*

141 **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. M. Mustert.*

161 **Calvin Band and Knollcrest Band.** Quarter course. In both bands representative works in wind literature are studied and prepared for concert performance. The Calvin Band meets four times per week and membership is maintained at a set instru-

mentation. It is open to students who meet the demands of musicianship and the instrumentation needs of the ensemble. The Knollcrest Band meets three times per week and is open to all freshmen and sophomores who wish to participate in concert band. *Mr. D. De Young.*

171 **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. *Mr. D. De Young.*

181 **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. *Mr. H. Slenk.*

GRADUATE COURSES

510 **School Choral Music.** An examination of the significant choral literature from the Renaissance to the present day. For daily research projects the student will use the reference works, scores, and recordings in the Calvin libraries. The instructor will call attention to the repertoire suitable for junior and senior high school choirs. Prerequisite: undergraduate major or minor in music or permission of instructor. *Mr. M. Mustert.*

511 **School Instrumental Music.** A survey of music and materials available for instrumental classes, small ensembles, bands and orchestras at the elementary, middle school, and high school level. The course covers such topics as the techniques for evaluating materials in terms of their musical value as well as for their effectiveness as teaching tools, the history and the development of literature for the wind band, and the principles of good programming. *Mr. D. De Young.*

512 **Using Music to Teach Other Subjects.** An examination of the ways in which music may support the learning of such other subjects as history, literature, geography, physical education, basic school skills, Bible, psychology, sociology, and foreign languages. Students will learn how to find, evaluate, and present music in areas that they select. No previous musical skills are required. Stu-

dents electing the course for only one-half course credit will do less research. *Mr. D. Topp.*

580 **Advanced Methods and Materials for Music Education.** An examination of music teaching methods and materials in a philosophical and historical context. Students will use readings in the philosophy and history of education combined with related lectures and class discussions as material for developing their own attitudes toward music education. Includes organization of programs for personal and professional growth. *Mr. D. Topp.*

590 **Independent Study.** F, I, S. *Staff.*

595 **Graduate Project.** F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

JANUARY 1986 INTERIM

W11 **The World Of Music: A Listener's Guide.** The goal of this course is to make the student a more perceptive, intelligent, and discriminating listener of a wide variety of music—old and new, simple and complex, popular and esoteric, ours and theirs. The emphasis is on connections between diverse pieces of music which are generated by the same basic human impulse—singing, dancing, or worshipping. The course is designed for anyone who enjoys music and wishes to enhance and broaden that enjoyment. Listening, textbook reading, lectures, and class discussions. Tests and listening quizzes. *Mr. C. Stapert, Mr. D. Topp.*

W13 **Afro-American Music.** This course is a study of traditional and popular African music and certain key elements which remain in the popular Afro-American music of twentieth century United States. Styles and forms to be encountered are talking drum music, juju, township jazz, spirituals, blues, swing, rhythm 'n' blues, soul, disco, funk. Films, videos, lectures, demonstrations, guest speakers/performers, rhythmic games. Students will be required to complete a project (construct an instrument or compose a piece of music), read and review two books, attend and review two live musical events, take two tests—one listening and one written, and do daily readings in the text. *Mr. J. Worst.*

W14 **Music for the Recreation Leader.**

This course emphasizes musical concepts and skills which are valuable to recreation leaders. Time is spent studying rhythm, pitch reading, scales, keys, and simple harmony. Students will learn basic conducting patterns, and there is an emphasis on song singing and song leading. Use of simple instruments for recreation are included and time is spent playing the recorder. There is an introduction to listening concepts appropriate for recreation programs. This course is especially applicable to students in the recreation program, but open to anyone with an interest in leading youth groups, summer camp counselling, etc. No previous musical skills are assumed, but the student should be able to sing on pitch (i.e. carry a tune). Class presentations, musical performances, quizzes, and a final test. *Mrs. T. Huizenga.*

W51 **Conducting the Church Choir.** This is a practical course for the prospective church choral director. The course includes an examination of choral repertoire for the adult and children's church choirs. Lectures and demonstrations are given on rehearsal procedures, service planning, and voice building. Each student will undertake a short, guided internship with a church choir, which includes rehearsal time and conducting a choir in the worship service. Prerequisite: 237. *Mr. H. Slenk.*

W53 **Hymn Arranging for Solo Guitar.** Students will create guitar arrangements of hymn and folk melodies by studying carefully selected elements of harmonic and counterpoint theory as they apply to the fingerboard. (This is not a course for learning how to strum chords for accompanying singing.) The arrangements, including the melody, are to be designed for solo guitar. Since the guitar presents special problems for the arranger, the material the student will learn is not available in conventional, keyboard-oriented music courses. The course is taught by lecture, writing and playing exercises, listening to tapes, and studying examples from the instructor's published and unpublished work. Students will be graded on their daily homework and in-class assignments as well as on a full length arrangement to be submitted at the end of the course. Although the student must be proficient enough on the guitar to play the written exercises, even if haltingly, the emphasis is on the theoretical pos-

sibilities and constraints imposed by the fingerboard, not on performance. Prerequisites: ability to read music in the treble clef, knowledge of some of the common chord formations, a general familiarity with the instrument, and must have a guitar, preferably a classical one. *Mr. A. Emerson.*

W54 Music Theory for the Beginner. A study of the elements of music with an emphasis on rhythm, melody, and harmony through lectures, discussions and practice sessions. The daily written assignments include the listening to, singing, playing, and writing of rhythms, melodies, and harmonies. The student will also examine selected compositions that illustrate these musical elements. This course is recommended to students with little or no theory background but who have performing skills in music,

and to those students who are considering a music major or a major involving music but are uncertain. Prerequisite: the ability to read music, preferably in both treble and bass clefs. *Mr. M. Mustert.*

W57 Opera Workshop. This course allows qualified students to combine an academic study of opera with practical experience in performing solo scenes from standard works of that genre. The emphasis is on learning how to move on stage and how to adapt one's talents to the musical and dramatic requirements of the specific scene. Approximately one-half of the class time is devoted to the musical and historical study of the arias/scenes; the second half is spent in blocking and rehearsing the stage movements. Prerequisites: two years of voice study. *Mr. C. Kaiser.*

Nursing

Associate Professor C. Kielinen (chairman)

Assistant Professors L. Burden, C. Danford, J. Derhammer, B. Gordon, M. Leen, T. Mansen, D. Rubingh, L. Sytsma, B. Timmermans

Instructors M. Doornbos, L. Fagerman, B. Medema

Teacher-Practitioners M. Vanderveen (Holland Community Hospital), M. Miller, L. Stachel (Butterworth Hospital)

STUDENTS SHOULD INDICATE their interest in nursing at the time they apply for admission to the college. They should start work on their pre-nursing requirements in their freshman year, following the suggested program closely. Transfer students who wish to be considered for admission to the nursing program should apply to the Office of Admissions of the college.

Students wishing to enter the Hope-Calvin Department of Nursing should make formal application to the department by January 15 of their sophomore year. Applicants should be aware that admission to the nursing program is selective and is not guaranteed by a student's acceptance to the college. Further information and application forms are available in the Department of Nursing and in the registrar's office. The Hope-Calvin nursing program is described in detail on page 71. Prospective students should consult Miss Cynthia E. Kielinen.

The baccalaureate nursing program requires fourteen course units: 301, 311, 321, 352, 373, and 375 in the junior year; and 401, 425, 472, 474, and 482 in the senior year.

301 Concepts of Nursing. F. This course introduces the nursing student to the theory and practice of professional nursing. The course focuses upon the concepts of Man, Health, and Nursing. Prerequisites: admission to the nursing program and registration in 311 and 321. *L. Fagerman.*

311 Communication, Relationships, and the Nursing Process. F. Communication skills, relationship development, health assessment, and decision making as they relate to the nursing process. Clinical experiences provide opportunities for the application of theoretical concepts to well clients. Individual family visits will be arranged. Prerequisites: admission to the nursing program and registration in 301 and 321. *L. Burden, M. Leen, D. Rubingh, L. Sytsma*

321 Assessment and Intervention Strategies for Nursing. F. This course is designed to assist students in developing general physical assessment skills and basic procedural skills necessary for providing nursing care to clients. The course consists of two hours of theory presentation and three hours of laboratory per week. Prerequisites: admission to the nursing program and registration in 301 and 311. *Miss C. Dandford, Ms. B. Medema.*

352 Alterations, Adaptations, and Nursing I. S, one and three quarter course. An introduction to the adaptation process of clients in altered states of health. Consideration is given to pathophysiology, socio-cultural factors, and developmental concepts. The role of the professional nurse is examined with respect to leadership, legal-ethical issues, standards of practice, and research. The course consists of six hours of theory presentation and two hours of seminar discussion each week. Prerequisites: 301, 311, 321, and registration in two sections of 375. *Staff.*

373 Acute Care Nursing. May-June Term. An in-depth exposure to the reality of nursing practice providing around-the-clock care for clients with alterations of health status. The four week experience includes application of nursing theory to practice and a clinical examination during the fourth week. Prerequisites: 352 and two sections of 375. *Staff.*

375 Nursing Care for Clients in Altered States of Health I. F and S, one and a half course. Clinical nursing practice in a nurs-

ing specialty area provides students with an opportunity to apply core theory within a nursing setting. Clinical conferences are held weekly. Students select two different areas while taking 352 and 401. The course consists of sixteen hours of clinical laboratory a week. Students select two clinical components concurrently with 352:

1. Nursing care of child-bearing families
2. Nursing care of children
3. Mental health nursing
4. Nursing care of adults

Prerequisites: 301, 311, 321 and registration in 352 or 401. *Staff.*

401 Alterations, Adaptation, and Nursing II. F, one and three quarter course. This course is divided into core-theory and seminar. Core-theory focuses on nursing care of clients in situations where life processes are threatened. Alterations in physiological regulation, associated psychosocial aspects of individual and family adaptation, and the multidimensional role of the nurse are considered. A concurrent seminar provides opportunities for the student to make relationships between core theory and clinical nursing experiences. The course consists of six hours of theory presentation and seminar discussion each week. Prerequisites: 373, 375, and registration in 425. *J. Derhammer, M. Doornbos, M. Miller.*

425 Nursing Care of Clients in Altered States of Health II. F, one and one half course. A continuation of 375. Clinical nursing practice in nursing specialty areas provides students with an opportunity to apply core theory in a nursing setting. Clinical conferences are held weekly. Students select different clinical components while taking 401. The course consists of 18 hours of clinical laboratory a week:

1. Nursing care of child-bearing families
2. Nursing care of children
3. Mental health nursing
4. Nursing care of adults

Corequisite 401. Select two clinical components concurrently with 401, select clinical components which are different from those selected in 375. *Staff.*

472 Individualized Clinical Nursing. I, half course. An individualized clinical nursing experience designed to meet specific learning needs of students. Students are given opportunities to synthesize their previous learning through caring for clients

with complex health problems within a clinical setting. All nursing shifts and working days are used. The weeks include ninety-six hours of clinical practice. Prerequisites: four sections of 375 and 401. *Staff.*

474 Nursing Management for Groups of Clients S. This course gives students the opportunity to integrate nursing theory and skills while developing a more advanced level of nursing practice. Clinical components include experiences in institutional inpatient and community settings. The focus is on nursing management of groups of clients. Nursing theory is presented in weekly seminars; clinical experiences relate theory

to practice. Prerequisites: 401, 425, 472, and registration in 482. *Staff.*

482 Nursing in Transition. S. This core theory course expands the students understanding of professional nursing. It explores organizational structure within the health care system. Emphasis is given to multi-dimensional aspects of nursing including teaching groups, research in nursing, and legal-ethical issues. Prerequisites: 472 and registration in 474. *Staff.*

JANUARY 1986 INTERIM

472 Individualized Clinical Nursing. *Staff.* See above for description.

Philosophy

*Professors †P. De Vos, **K. Konyndyk *G. Mellema, C. Orlebeke (chairman), **N. Wolterstorff*
Associate Professors D. Ratzsch, H. Schuurman, S. Wykstra, L. Zuidervaart
Assistant Professors L. Hardy, D. Snyder
Adjunct Professor A. Plantinga
Professor of Interdisciplinary Studies M.S. Van Leeuwen

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 Introduction to Philosophy (153), one course in logic, two historical period courses (251-252), an advanced historical course, two systematics courses one of which must be from the advanced level, and an elective. The student is also required to take a four-unit cognate in another department that is approved by the departmental adviser.

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 209 or Education 304.

ELEMENTARY COURSES

153 Introduction to Philosophy. F and S, core. A one-semester introduction to philosophy which aims to give the student a Christian philosophical framework for his thinking, along with some awareness of important alternative philosophical perspectives. *Staff.*

171 Introduction to Logic. F and 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. D. Ratzsch, Mr. H. Schuurman.*

173 Introduction to Symbolic Logic. F

and S. 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. K. Konyndyk, Mr. G. Mellema.*

INTERMEDIATE SYSTEMATIC COURSES

All intermediate courses presuppose one course in philosophy.

202 **Philosophy of Law.** * A consideration of such topics as: the nature and types of law; sources of law; and the basis of a legal system, of legal and political authority, of obedience to law, and of human rights. *Staff.*

203A **Philosophy of Science.** *F. A study of philosophical problems arising out of the methods and results of the *physical sciences.* *Mr. D. Ratzsch.*

203B **Philosophy of Science.** * S. A study of philosophical problems arising out of the methods and results of the *social sciences.* *Mrs. M. S. Van Leeuwen.*

204 **Philosophy of Religion.** * S. A study of some philosophical questions arising from religious belief. *Mr. S. Wykstra.*

205 **Ethics.** * F and S. A course designed to deal both historically and situationally with the persistent problems of the moral life. *Mr. E. Langerak, Mr. D. Snyder.*

207 **Political and Social Philosophy.** * F and 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. S. Griffioen.*

208 **Aesthetics.** * F and S. A study of the nature of art and aesthetic judgments. *Mr. L. Zuidervaart.*

209 **Philosophy of Education.** * S. A study of the nature, aims, and principles of education. *Mr. G. Mellema.*

INTERMEDIATE HISTORICAL COURSES

All intermediate courses presuppose one course in philosophy.

251 **History of Philosophy I.** *F and S, core. A survey of the major Western philos-

ophers and philosophical movements of the ancient and medieval periods. *Mr. C. Orlebeke.*

252 **History of Philosophy II.** *F and S, core. A survey of some of the major Western philosophers and philosophical movements from the seventeenth century to the present. A continuation of 251, which is a recommended preparation. *Mr. L. Hardy.*

ADVANCED HISTORICAL COURSES

All advanced courses presuppose at least two courses in philosophy, normally two courses from the intermediate historical group.

312 **Plato and Aristotle.** * S. Advanced study of Plato and Aristotle. *Mr. C. Orlebeke.*

322 **St. Thomas Aquinas.** * F. An intensive study of selected passages from Aquinas' *Summa Theologiae* dealing with the topics of God, human knowledge, and virtue. *Mr. K. Konyndyk.*

331 **Kant.** * S. A study of the *Critique of Pure Reason.* Not offered 1985-86.

334 **Marx and Marxism.** * S. A critical study of the thought of Karl Marx and his most important interpreters, including Lenin and contemporary Marxist humanists. *Staff.*

336 **Studies in Modern Philosophy: Descartes, Hume, and Reid.** * F. A critical study of common epistemology problems in Descartes, Hume, and Reid. *Mr. S. Wykstra.*

340 **Twentieth Century Continental Philosophy.** * F. A study of major figures in recent phenomenology and existentialism. *Mr. L. Hardy.* Not offered 1985-86.

ADVANCED SYSTEMATIC COURSES

All advanced courses presuppose at least two courses in philosophy, normally two courses from the intermediate historical group.

367 **Issues in Social and Political Philosophy.** * F. An examination of some significant topics in social and political thought, with an emphasis on current theoretical perspectives and on important figures and movements in the philosophical tradition. H. Dooyeweerd's *Roots of Western Culture* and works by Habermas will be examined. *Mr. S. Griffioen.*

371 **Epistemology.** * F. A study of the

nature, sources, types, and limits of human knowledge. *Mr. N. Wolterstorff.*

375 Philosophical Anthropology.* A critical examination of major philosophical discussions of the nature of man, with special attention to the concepts of mind, body, action, soul, and immortality. Not offered 1985-86.

381 Advanced Logic.* Topics include the formalization of propositional and quantificational logic. Taught jointly with the Mathematics Department and also listed as Mathematics 381. *Mr. P. Zwier.*

390 Readings and Research. F, I, S. Prerequisite: permission of chairman. *Staff.*

395 Ontology.* S. A study of selected topics of ontology. *Staff.*

GRADUATE COURSES

501 The Educational Enterprise: A Philosophical Perspective. An examination of factors presently operative in the educational enterprise from the perspective of the history of Western philosophy. *Mr. G. Mellema.*

590 Independent Study (graduate). F, I, S. *Staff.*

595 Graduate Project. F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

JANUARY 1986 INTERIM

W10 The History and Character of the Pentecostal Movement. Students will begin with the history of the American Pentecostal movement from its roots in the Holiness movement which in turn arose out of the Methodist context. Particular attention is given to the emergence of and defenses

given for the distinctive doctrines of those groups. Students will then focus on the character and growth of the Pentecostal movement, paying particular attention to the leading Pentecostal denomination, the Assemblies of God, and finally look at the spread of Pentecostal themes into other traditions, including the Reformed tradition. A number of visits from representatives of holiness and pentecostal denominations are planned, as well as visits to Sunday services of churches in those denominations. Students will be expected to do assigned reading, independent reading, keep a journal, and participate in a group project. *Mr. D. Ratzsch.*

W50 By the Sweat of Thy Brow: The Philosophy of Work and the Theology of Calling. Much time is spent at college in preparation for work of a specific kind, yet relatively little time is spent in reflection on the nature of work *per se*—its meaning, history, and proper place within our lives today. In this course students will have the opportunity to review the history of western attitudes towards work, consider the Christian notion of 'calling', and examine the current structure of work in our own society. Emphasis is placed on the identification of relevant Biblical principles and their implications for responsible vocational choice and the institutional formation of human work, especially as these principles bear upon contemporary options in management theory. The course consists of lectures, films, discussion, and field trips; requirements: midterm, final, and a written report. Prerequisites: 153 or permission of the instructor. *Mr. L. Hardy, Mrs. S. Roels.*

IDIS W13 Interim in Central America. *Mr. S. Wykstra, Mr. R. Hoksbergen.*

IDIS W23 Business Ethics. *Mr. G. Mellema.*

IDIS W54 Philosophy of Technology. *Mr. L. Van Poolen, Mr. C. Orlebeke.*

Physical education

Professors J. Timmer (chairman), D. Tuuk, M. Zuidema

Associate Professors R. Honderd, G. Van Aniel, N. Van Noord, D. Vroon, D. Zuidema

THE DEPARTMENT SERVES a number of functions—it provides a required but flexible sequence of physical education courses for all students; it offers professional training for physical education teachers, coaches, and recreation leaders; and it directs an extensive program of intramural, recreational, and intercollegiate sports for men and women.

Admission to any of the major concentrations requires the approval of the department chairman. The general nine course major leading to a Bachelor of Arts degree in physical education requires 201, 212, 213, 220, 301, 315, 325, and 332 plus two course credits from course numbered 200 and above. For those students interested in exercise science, the general major sequence would be taken plus a seven-course science cognate—Biology 131, 205 and 206; Chemistry 113 and 114; Physics 223; and Mathematics 143. Students selecting a concentration in exercise science should plan on taking graduate studies to complete their specialization.

The nine and one-half course teacher education major requires 201, 212, 213, 220, 301, 302, 325, 332, and 380 plus two course credits from the 240 series, Teaching of Education Sport Activities.

The program in recreation can lead to either a Bachelor of Arts degree or, if the students wishes, to a Bachelor of Arts in Recreation degree. Students in this program must complete a liberal arts major as well as a concentration in recreation. The adviser for this program is Mr. Glen Van Andel.

The liberal arts major required for the recreation program may either be interdisciplinary or in a single department, depending on the interests of the student. These majors are usually in art, communication arts and sciences, economics and business, music, physical education, psychology, sociology, and religion and theology and are described in the departmental sections of this catalog. Interdisciplinary group concentrations are usually designed by the recreation program advisor and need the approval of the registrar and the chairmen whose departments are involved.

The physical education major for students in the recreation programs requires 201, 212, 213, 221, 301, 325, 332 plus four course elective credits from the physical education course offerings. Electives need the approval of the recreation program advisor.

Students who wish to minor in physical education may chose from two areas of concentration. A teacher education minor requires six courses: 212, 220, 302, 325, 332, 380 and one course credit from the 240 series. A teacher education minor with a coaching emphasis requires 212, 220, 312, 315, 325, 380 and one course credit from the 230 series.

The liberal arts core requirement in physical education may be met by taking one course unit from courses number 100 through 199. Normally students meet this requirement with four quarter courses in four semesters, or 105 plus two quarter courses. The initial core course for all basic instructional courses should be 102, 103, 104, or 105. Subsequently students must select basic instructional courses from the 110-199 sequence to complete their requirement. Majors and minors in physical education as well as elementary education students may substitute 221 for one of the courses in the 110-199 series. Although students may

take courses in addition to this, only one course unit of credit may be applied to the minimum graduation requirements.

PHYSICAL EDUCATION COURSES

102 Weight Reduction. F and S, quarter course. This is a specialized course for students needing and desiring to lose weight. It begins with a body weight and fitness evaluation and includes a study of nutritional and health fitness. Students are placed on a scientific program of weight loss and exercise. *Staff.*

103 Therapeutic Fitness. F and S, quarter course. This is a course for students with special medical problems or in need of specific cardio-respiratory fitness development. The college or family doctor is consulted in cases where a medical history is necessary. Fitness and medical needs are evaluated and prescriptive exercise programs are developed. *Staff.*

104 Physical Conditioning. F and S, quarter course. This course aims at building cardio-respiratory and muscular fitness. Various forms of aerobic fitness options are presented, students are told how to make intelligent exercise decisions, and they are introduced to the idea that health fitness maintenance is a Christian responsibility. The course includes readings, lectures, and guided exercise sessions. *Staff.*

105 Health Fitness. F and S, half course. This course involves the study of positive health practices in health fitness, including cardio-vascular physiology, nutrition, and exercise. The course includes lectures, laboratories, and discussions along with three exercise sessions a week. This option is for students seeking a total health fitness building experience. *Staff.*

110-189 Guided Instructional Program. F, I, S, quarter courses. Various play and sport options are offered in this program. Students are introduced to the techniques and tactics of each sport and are given an opportunity to participate. Courses include: swimming, senior life saving, diving, archery, badminton, bowling, golf, handball, racquetball, tennis, gymnastics, weight training, basketball, volleyball, soccer, softball, folk and square dance, aerobics dance, orienteering, ice skating, cross-country skiing, and downhill skiing. Beginning and advanced skill classes are offered in most activities. Students should select courses that correspond to their skill levels. *Staff.*

201 Historical Foundations of Physical Education and Sport.* S. 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. J. Pettinga.*

212 Anatomical Kinesiology. F. A study of human motion based on structural foundations. Particular attention is given to bone, joint, muscle, connective and nerve structures, and the movement patterns specific to these structures. An analysis of efficient anatomical movement patterns for locomotor, manipulative, and sport skills are studied in the course. Prerequisite: Biology 115. *Mr. R. Honderd.*

213 Mechanical Kinesiology. S. An investigation into the physical laws of motion and how these laws apply to the human body and to objects projected by the human body. Specific sports skills are analyzed with respect to both kinematics and kinetics. Students determine efficient movement patterns for sports skills based on the mechanical principles studied in the course. Prerequisites: 212 and Physics 223. *Staff.*

220 Motor Learning and Skill Performance. F. This course in the psychology of learning, particularly motor learning, emphasizes theory formation and empirical strategies. It includes an examination of the various characteristics of the learner, an attempt to develop specific theories of how motor skills are acquired, and a review of teaching strategies that are appropriate for teaching them. The focus is on the learner, the learning process, and methods of instruction and includes an evaluation of growth and the developmental factors influencing learning. The course gives opportunities for practical experience in applying motor learning principles. This course substitutes for one course unit in the 230 series. *Mr. M. Zuidema.*

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 educa-

tion majors and minors and for elementary teacher education students. *Mrs. K. Wolters, Mr. M. Zuidema.*

230-231 The Coaching of Sports. Half courses. 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.

230 Field Hockey. *F. Miss D. Zuidema.*

231 Basketball. *F. Mr. E. Douma.* Not offered 1985-86.

232 Baseball/Softball. *S. Mr. J. Pettinga.* Not offered 1985-86.

233 Track and Field. *S. Mr. R. Honderd.*

234 Soccer. *F. Mr. M. Zuidema.* Not offered 1985-86.

235 Volleyball/Tennis. *S. Mr. D. Vroon, Miss K. Wolters.*

236 Football. *F. Mr. J. Pettinga.*

238 Wrestling. *F. Mr. J. Pettinga.*

240-243 Teaching of Activities. F and S, half courses. A study of the basic principles, terminology, skills, and strategies involved in various educational sports activities and the methods and materials that are appropriate for incorporating these activities into physical education programs. Lectures, discussions, demonstrations, laboratory experiments, and student presentations. Prerequisites: 220 and completion of a basic physical education course in the activity to be studied or credit for that activity in 380.

240 Teaching of Gymnastics and Rhythmics. *Miss N. Van Noord.*

241 Teaching of Team Sports. *Miss K. Wolters.*

242 Teaching of Aquatics. *S.* Not offered 1985-86.

243 Teaching of Racquet Sports and Golf. *F. D. Zuidema.* Not offered 1985-86.

301 Measurement and Evaluation in Physical Education.* S, half course. 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. *Staff.*

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. May substitute for 230 in major programs with the approval of the department. Prerequisite: a biology core course. *Mr. J. Timmer.*

315 Sociology of Sport. S. A study of the social and social-psychological dynamics of sports in modern society. Areas receiving special attention are youth sports, interscholastic sports, and professional sports. Emphasis is put on describing and understanding sports participants, observers, and the relationship of sport as an institution to the rest of the social structure. Offered as Sociology 315. *Mr. G. De Blaeij.*

325 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: a biology core course. *Mr. J. Timmer.*

332 Philosophy of Physical Education and Sport. F, half course. This course introduces the student to the philosophical reflections in physical education and sport and examines existing theories about physical education and sport in society. Prerequisites: 201, Philosophy 153, or 151 and 152, junior status. Not offered 1985-86.

380 Individual Competences. F, I, S, 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. *Mr. E. Douma.*

390 **Independent Study.** F, I, S. *Staff.*

RECREATION COURSES

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. *Miss D. Zuidema.*

304 **Systems and Structures of Recreation I.** F. Modern recreation programs and their organization are identified and studied in this course with particular emphasis on administrative and leadership functions, recreational needs of social groups, and the design of recreational programs, including the problems of finances and facilities. Students observe recreational programs and facilities in therapeutic centers, churches, industry, and the community. Prerequisites: completion of the non-professional courses in the major. *Mr. G. Van Andel.*

305 **Systems and Structures of Recreation II.** F. Continuation of 304. *Mr. G. Van Andel.*

310 **Theories of Play.** F. A basic course in the theory of recreation. Professionals in recreation need to understand the basic concepts, definitions, and theories of play and recreation to be able to carry out their professional responsibilities. An understanding of the history and theories of play provide a framework for students working toward a Christian perspective on play and recreation and toward their own theories, programs, and practices. Prerequisite: completion of the non-professional courses in the major. *Mr. G. Van Andel.*

345 **Field Instruction in Recreation.** F and S. Students are assigned to work with field instructors in recreational agencies enabling them to understand the specific agencies and the types of services provided. Individual programs are worked out by the college supervisor, the field instructor, and the student to enable the student to achieve his professional goal. May be repeated once. Prerequisites: 304, 305, 310. *Mr. G. Van Andel.*

346 **Field Internship in Recreation and Seminar.** F and S, two to four course units.

Students electing this course are involved full time in a semester's field experience in a recreational agency. An accompanying seminar on campus focuses on the problems of relating theory to practice. Prerequisites: 304, 305, 310, a minimum cumulative average of C (2.0), and the approval of the department. *Mr. G. Van Andel.*

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W13 **Health Promotion.** This course is designed to acquaint the students with scientific data that shows them positive steps they can take to practice health promotion. Four main areas are studied: nutrition, stress management, exercise, and the spiritual dimension. The course is taught as a typical lecture class. Two small books are required. One paper, three quizzes, and an examination. *Mr. R. Honderd.*

W14 **Application of Psychology to Athletics and Physical Education.** This course is designed to answer how, when, and why psychological factors influence motor performance. Research based topics include reinforcement, feedback, shaping, modeling, attentional styles, self-efficacy, motivation, performance under stress, and the control of competitive anxiety. Students will be evaluated on in-class participation, group presentations, homework assignments, observational reports, and the development of a comprehensive sport psychology notebook. *Ms. N. Van Noord.*

W15 **Adaptive Physical Education and Recreation for Special Populations.** The purpose of this course is to acquaint the student with a wide variety of physical education and recreation adaptive programs and activities in physical education and recreation used to serve persons with disabilities. Students will meet regularly for class lectures and will also be assigned to specific field practice agencies where they will be able to observe and participate in ongoing physical education and recreation programs for persons with disabilities. Lectures, films, and written materials are used to provide a basic understanding of various disabilities such as orthopedic handicaps, cerebral palsy, sensory impairments, cardiopathic conditions, respiratory disorders, learning disabilities, and behavioral disorders, and with adaptive programming techniques. The student will also have an opportunity to practice these techniques in a local agency such as a school, rehabilitation facility

ty or community recreation program that serves persons with special needs. An examination and paper are required. Physical education, recreation, or special education students preferred. *Mr. J. Pettinga, Mr. G. Van Anandel.*

W16 Winter Outdoor Education. This course provides the student with the opportunity to gain experience, through research and field trips, in winter survival techniques

and non-motorized forms of transportation. The student will also study the wildlife of Michigan in the winter. A research project, class reports, library readings, quizzes, and a final examination. Open to physical education majors, minors, and recreation majors. Fee of approximately \$20. *Mrs. K. Wolters, Miss D. Zuidema.*

IDIS W14 The History of the Dance. *Mrs. E. Van Hof.*

Physics

Professors R. Griffioen, A. Kromminga, H. Van Till, J. Van Zytveld (chairman)
Associate Professors S. Haan, D. Van Baak

STUDENTS INTENDING TO MAJOR IN PHYSICS are advised to enter college with four years of mathematics and to take their required courses in mathematics (Mathematics 161, 162, 231, 261) and physics (Physics 123, 124, 181, 182, 225, 226) during their freshman and sophomore years. Computer Science 141 is also recommended for the first semester of the freshman year. Students may apply for admission to the department before completing 226 and Mathematics 231, 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 consists of a total of nine courses, including the required basic physics courses listed above. Each student's program of concentration must be approved by the department and must include an appropriate distribution of theory and laboratory courses as well as cognate courses in mathematics.

Students planning to pursue graduate study in physics should take, in addition to the introductory courses, 280, 335, 345, 346, 375, 376, a minimum of a half course credit of 382, 365 or 379, 395 and 396 or an interim course in research, and Mathematics 333.

The nine-course unit secondary education concentration requires Interdisciplinary 210 or Philosophy 203, Physics 123, 124, 181, 182, 225, 226, 280, one advanced theory course from 335-379, a half course unit of 382, a half course unit of 390 involving a study topic appropriate for students planning to teach high school physics, and approved electives from advanced physics courses, Astronomy 201, and Geology 331. Student teaching is offered only in the spring semester.

A physics-computer science group major consists of 126, 186, 225, 280, and 385 (123, 124, 181, and 182 may be substituted for 126 and 186); Computer Science 151, 152, 251, and one from 243, 252, 370, or an approved interim; Mathematics

161, 162, 231 or 255, and 261; and additional approved courses to provide a minimum total of six courses in either physics or computer science.

The teaching group major in physics and chemistry consists of Physics 123, 124, 181, 182, 225, 226; Chemistry 103, 104, and either 253–254 or 301–302; and two and a half courses of approved electives. Courses recommended for such electives include Physics 280, 382, Chemistry 201, 317, 318, and 396. The advisers for such programs are Mr. Paul Boonstra of the Department of Mathematics and the chairmen of the two departments.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. The majors are not appropriate for students who anticipate attending graduate school in physics or who are in teacher education programs. Such group majors require twelve courses in the sciences and mathematics, ten of which must be from two departments with no fewer than four from either, with the remaining two courses chosen from a third department. The chairmen of the three departments must approve each program of this type.

A six-course minor concentration, which is also appropriate for teacher education, consists of 123, 124, 181, 182, 225, 226, 382, plus one and a half course units approved by the department chairman.

The physical science core requirement may be met by 110 or 112. Students preparing to be elementary teachers should take 112 unless they have had high school physics, in which case they should take 113.

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 112, 123, 126, or 221. Laboratory. Prerequisites: high school algebra and Mathematics 100, 121, or the equivalent. *Mr. D. Van Baak, Mr. W. Vryhof.*

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. Emphasis is placed on the processes and structure of science. The course is intended for future elementary school teachers and makes use of elementary school science programs and materials but is open to all students interested in a laboratory-oriented course. Not open to those who have taken or plan to take 110, 123, 126, or

221. Prerequisites: high school algebra and Mathematics 100 or 121 or their equivalent. *Mr. S. Haan, Mr. C. Menninga.*

113 Scientific Processes and Science Teaching. F and S, half course. A study of the processes and structure of science, designed to acquaint future elementary school teachers with the fundamentals of science and their use in elementary school science programs. Extensive use is made of programmed modules and elementary school science materials. For students entering elementary education programs who have taken 110 or Astronomy 110 previously rather than 112, the preferred course. Not open to students who have taken 112. Prerequisite: 110 or Astronomy 110. *Mr. S. Haan.*

123 Introduction to Modern and Classical Physics. F, half course. This course, along with 124, 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 123–124 rather than with 110. Topics in classical physics include mechanics and thermodynamics. The nature of scientific study in general and its place in one's world and life view will be discussed. Prerequi-

sites: concurrent registration in or completion of 181, Mathematics 161, and, if possible, Computer Science 141. *Mr. D. Van Baak.*

124 Introduction to Modern and Classical Physics. S, core. A continuation of 123, which is a prerequisite. Prerequisites: Mathematics 161 and concurrent registration in Mathematics 162 and Physics 182. *Mr. D. Van Baak.*

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. Prerequisites: Mathematics 161 and concurrent registration in Mathematics 162 and Physics 186. *Staff.*

195 Physics Student Seminar. F and S, no credit. An introduction in a seminar format to recent developments in physics. Both readings and laboratory topics are available for study and discussion. Junior and senior physics majors must attend each semester; freshmen and sophomores intending to major are encouraged to attend. *Mr. D. Van Baak.*

221 General Physics. F. One and one-quarter courses. 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, light, waves, relativity, and quantum theory. Laboratory. Prerequisites: plane trigonometry and high school algebra. *Mr. S. Haan.*

222 General Physics. S, core. One and one-quarter course. A continuation of 221, which is a prerequisite. Laboratory. *Staff.*

223 Physics for the Health Sciences. F, core. An introduction to those topics in physics which are applicable to a variety of health science fields with special emphasis on understanding various physical aspects of the human body. Topics include basic laboratory techniques and instruments for physical measurements, data analysis, basic mechanics, fluids, heat, electrical circuits, sound, optics, radioactivity and x-rays, a discussion of the nature of physical science,

and a Christian approach to science. Laboratory. Prerequisites: high school geometry and algebra. Not open to those who have taken or plan to take 221. *Mr. J. Van Zytveld.*

225 Introductory Physics: Electricity, Magnetism, and Waves. F, core. A study of the properties of electric and magnetic fields and of the integral form of Maxwell's equations which describe these fields; a mathematically unified treatment of alternating current circuits, general wave phenomena, and geometrical and physical optics. Laboratory. Prerequisites: 124 or 126, 182 or 186, Mathematics 162, and concurrent registration in Mathematics 261. *Mr. R. Griffioen, Mr. A. Kromminga.*

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, Mathematics 261, and Computer Science 141. *Staff.*

280 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; integrated circuits; and microprocessors. Laboratory exercises in all of the above topics are performed. Prerequisite: 225. *Staff.*

285 Introduction to Digital Electronics. F. An introduction to digital electronics for students with little or no background in physics or electronics. Topics include: basic circuit elements and laboratory instruments, discrete circuits for digital functions, Boolean algebra for circuit design, logic circuit analysis and design, and integrated circuits. Not intended for students who have taken or plan to take 280, or Engineering 206 or 208. Laboratory. *Mr. J. Van Zytveld.*

385 Introduction to Microprocessors.* S. An introduction to microprocessors, including the following topics: technology of microprocessor development, microprocessor architecture, programming, systems design, interfacing, and peripherals. Laboratory. Prerequisite: 285 or its equivalent and programming experience. *Mr. J. Van Zytveld.*

ADVANCED THEORY COURSES

Prerequisites for all of the 300-level physics courses are Computer Science 141 or its equivalent as well as Mathematics 231 and 261.

335 Classical Mechanics.* F, alternate years. 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. J. Van Zytveld.*

345 Electromagnetism.* F, alternate years. The basic equations of classical electromagnetic 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. Static field theory is considered in 345 while dynamic field theory and special relativity are developed in 346. Prerequisite: 225. *Mr. D. Van Baak.*

346 Electromagnetism.* S, alternate years. A continuation of 345, which is a prerequisite. Not offered 1985-86.

365 Thermodynamics and Statistical Mechanics.* S. Equations of state, heat capacities, and the laws of thermodynamics. The thermodynamic potentials. Application to some simple systems and changes of phase. Kinetic theory. Statistical mechanics with emphasis on the canonical ensemble. Determination of entropy and the thermodynamic potentials with application to crystals and gases. Introduction to quantum statistical mechanics. Prerequisite: 335. Offered alternate years. *Mr. A. Kromminga*

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 or Chemistry 306. *Mr. S. Haan.*

376 Quantum Mechanics.* S. A continuation of 375, which is a prerequisite. *Mr. S. Haan.*

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: 376. Not offered 1985-85.

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. D. Van Baak.*

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. D. Van Baak.*

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 161. *Mr. D. Van Baak.*

186 Introductory Physics Laboratory. S, quarter course. An introduction to basic D.C. electrical measurements and their use in studying various mechanical systems and thermodynamic phenomena. Not open to those who have taken 181. Concurrent registration is required in 126 or the permission of the instructor. *Staff.*

382 Modern Physics Laboratory.* F and S. Quarter 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. This course may be repeated with the permission of the instructor. Prerequisites: 280, Engineering 206 or 208, or a year of college physics and permission of the instructor. *Mr. D. Van Baak.*

395-396 Physics Seminar and Research.* F, S, half course; I, full course. Experimental or theoretical research on an approved topic and presentation of the result of the research in a departmental seminar. Prerequisites: 382 and the approval of the department. *Mr. D. Van Baak.*

GRADUATE COURSES

510 Physical Science and Contemporary Society. This course is designed to show the elementary or middle school teacher how physical science and its resulting technology interact. It does not deal primarily with the concepts and theories of physical science, but will focus on the societal impact of physical science. Topics of major interest include energy sources and energy use, supply and use of other material resources, and the limitations of physical science in solving societal problems. Prerequisite: 112 or its equivalent. *Staff.*

590 Independent Study. F, I, S. *Staff.*

595 Graduate Project. F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

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W11 Is Nuclear Energy More Dangerous Than Conventional Energy? This course examines some of the dangers to the environment and to the public safety and health that are posed by modern technologies for generating electrical energy. The course studies nuclear power in detail, first studying scientific aspects of harnessing nuclear energy, and subsequently assessing risks from nuclear accidents and radioactive wastes. Possible connections between nuclear power, terrorism, and nuclear weapons are considered. Topics studied in the context of fossil fuels include air pollution, acid rain, and the global increase in carbon dioxide. Alternative energy sources such as solar, wind, and biomass are also considered. Finally, the course examines the presentation of the various technologies by the media. Students will be expected to solve some elementary problems, read assigned papers and books expressing differing viewpoints, and write a short paper. Prerequisite: one course in high school or college physics. *Mr. S. Haan.*

W12 History of Science in the Arab World. Students will study the unique contributions made by Arabic scholars to science, mathematics, and medicine as well as their role in the assimilation and preservation of Greek ideas. These contributions are very broad: in mathematics they include the development of the number system, of algebra (this word itself is from the Arabic) and trigonometry; in astronomy, religious interests motivated studies of planetary models and celestial observations; in medicine and pharmacology, emphasis was placed on a wholistic model of the human being. The period from about 600 AD to the end of the Dark Ages in Europe receives special emphasis; this period was the Golden Age of Arab Science. This course should have special appeal to students with interests in history, in studies of foreign language and culture, and in science and the history of science. Readings and research are required. *Mr. J. Van Zytveld.*

W51 Microcomputers and the Real World. A microcomputer is best thought of as an information-processing device; in this view one can readily imagine sources of information other than a keyboard, and destinations other than a display screen. The focus of this course is on the processing, by microcomputers, of information communicated electrically from and to the real world. Topics covered include: the manipulation of information by a microcomputer, the encoding of real-world information into electrical form by sensors and transducers, the interconnection of microcomputers with external electronic devices, computer-aided measurement and control, data-taking and data-logging, and closed-loop or adaptive microcomputer systems. Programming is done in BASIC, with assembly language introduced only as needed. Laboratory exercises are conducted using AIM-65, or personal, microcomputers. Lectures, worksheets, labs, projects, and a final oral report on an application. Prerequisite: programming experience in BASIC. *Mr. D. Van Baak.*

IDIS W16 Politics and the Bomb. *Mr. R. De Vries, Mr. A. Kromminga.*

Political science

Professors *J. De Borst (chairman), R. De Vries, J. Penning, **C. Smidt, C. Strikwerda
Assistant Professor K. Hollingsworth

TO BE ADMITTED TO A MAJOR PROGRAM in political science a student must have completed one of the core credit courses (151, 201, 202, 203, or for Canadians, 210) with a minimum grade of C (2.0). The major program requires: 201; one from 203, 206, and 303; 207; 305 or 306; and six additional courses in the department. Canadian students should take Political Science 210. Students planning to pursue graduate work in political science should take both 305 and 306.

Students preparing for a secondary teaching certificate should follow the normal major but need complete only five additional courses. A teacher education minor requires 151, 201, 202, and three additional courses approved by the departmental adviser for teacher education, Mr. Robert De Vries.

A general departmental minor consists of a course in American politics from 201, 202, 209, 310, 312, 313, or 315, a course in comparative and international politics from 203, 206, 207, 210, 303, 308, or 309, a course in political theory from 151, 305, or 306, and three additional courses, one of which may be an interim course.

Although the core may be satisfied by 151, 201, 202, 203, or 210, Canadians are advised to take 210 and prospective elementary teachers either 201 or 210.

151 Introduction to Politics. F and S, core. A general survey course which introduces students to the nature and study of politics and includes some of the enduring questions of conflict and cooperation within and between nation-states. For freshmen and sophomores only. *Staff.*

201 American Politics. F and S, core. A study of American national politics. Emphasis is on the social context, constitutional foundations and the major institutions, processes, and functions of American politics. *Staff.*

202 American State and Local Politics. F, core. A study of American politics on the state and local levels. Emphasis is on state policy making, urban politics, and metro-politics. *Mr. J. Penning.*

203 Comparative Government-Europe. S, core. A study of the government and politics of Great Britain, France, Germany, and

other Western European states. *Mr. C. Strikwerda.*

206 Comparative Communist Systems. F. A comparative study of Communist political systems with emphasis on the Soviet Union, China, and Eastern Europe. *Mr. C. Strikwerda.*

207 Introduction to International Politics. F. A study of power relations among nation-states analyzing different theoretical approaches to the study of international politics, describing the state system and its basis in the doctrine of sovereignty, and examining the phenomena of nationalism, imperialism, and war. Included are the problem of war and peace and how states try to resolve conflicts peaceably through diplomacy. *Mr. R. De Vries.*

209 Public Administration. S. An introduction to the political process. Principles of administrative organization, public man-

agement, personnel administration, and budgeting. The political and administrative problems encountered by government agencies charged with carrying out public policies. *Mr. J. Penning.*

210 Canadian Government and Politics. S. 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, 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. De Borst.*

303 Comparative Government-The Non-Western World.* F. 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. K. Hollingsworth.*

306 History of Modern Political Thought.* S. Representative political theorists from the Reformation to the present. *Mr. K. Hollingsworth.*

308 Principles of American Foreign Policy.* S. An analytical view of American foreign policy; its domestic sources; the process of formulating policy; the 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.* An examination of regional and universal international organizations; their processes, functions, and impact on the international system. Special emphasis is given to the limitations and possibilities of the United Nations system. *Mr. R. De Vries.* Not offered 1985-86

310 The Judicial Process and Civil Liberties.* S. A study of the judicial process in American politics. Special attention is given to the role of the Supreme Court, the power and practice of judicial review, and the Court's interpretations of the Constitution, especially in the area of freedom of ex-

pression and defendant rights. *Mr. J. De Borst.*

312 Legislative Behavior.* F. A study of legislatures, legislators, and the legislative process including the impact of institutional structures, political parties, interest groups, and personal norms on the legislative process in democratic political systems. The emphasis is on the federal Congress, but non-American legislatures are considered for comparative purposes. *Mr. J. Zoeteway.*

315 The American Presidency.* An historical and critical study of the American presidency including an analysis of the growth of the office, the selection process, the nature of presidential power, the domestic and international pressures and constraints on the office, and the relationship of the presidency to other agencies and branches of government. Not offered 1985-86.

317 Parties and Elections. An analysis of the nature and importance of political parties and of elections to American politics. Topics included are: party development, party organization, campaign management, electoral laws, voting behavior, and election reforms. In election years, students enrolled in this course will be encouraged to participate in the political campaign of the party or candidate of their choice. Not offered 1985-86.

318 American Politics and Mass Media.* F. A survey of the relationship between American politics and the mass communications media. The course covers the way the federal government through its regulations and its dissemination of information affects the operations of the media, and how the media influence the social and political values of Americans and the functioning of the political system. *Mr. C. Smidt.*

380 Internship in State and Local Government. S, two course units. A field experience involving working for a government agency, an elected government official, or a private interest group at the state or local level of government. Student interns work ten to sixteen hours per week for thirteen weeks under the direction of an agency instructor. Interns also attend weekly seminars conducted by the college instructor. Prerequisites: two political science courses, including 202, or permission of instructor. *Mr. J. Penning.*

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.***

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W11 **Understanding Public Policy.** This course examines public policy-making in the United States, giving special attention to: the process of policy-making, the content of American policy in such important areas as education, criminal justice, healthcare, and defense, and methods of evaluating public policies. The course includes lectures, discussion, two exams, policy debates, and a one-week urban government simulation game. *Mr. J. Penning.*

W12 **Politics of Religious Movements.** A study of the relationship between religion and politics. Attention is given to the influence of religious beliefs, their social context, and their institutional embodiments on political modernization. Case studies include the Puritan Revolution in England, the rise of the Social Gospel and fundamentalist Protestantism in the early 1900s, the Catholic Church and liberation theology in contemporary Latin America, and the growth of Islamic fundamentalism in the Middle East. Lectures, discussion of texts, an occasional film. Daily readings, short research paper, and final examination. Reading list available in December. *Mr. J. Guth.*

IDIS W16 **Politics and the Bomb.***Mr. R. De Vries, Mr. A. Kromminga.*

IDIS W56 **China - Past and Present.***Mr. C. Strikwerda.*

Psychology

*Professors M. Bolt, J. Brink, *W. Joosse, A. Reynolds, W. Sanderson, R. Stouwie (chairman), R. Terborg, M. Vander Goot, G. Weaver*
*Associate Professor **S. Stehouwer*
Assistant Professor J. De Boe

STUDENTS INTENDING TO MAJOR in the department must complete 151 with a minimum grade of C (2.0). The nine course major consists of 151, 250, 306, three 300-level electives, one of which must be chosen from 330 through 334, and three additional courses from the department. Not more than one interim may be included in the nine-course major nor may 390, or any interim, be counted as a 300-level elective.

Students intending to do graduate work in psychology or related fields should include 395 in their program of concentration and should plan their programs with a departmental adviser.

The teacher education minor consists of six courses: 151, 212, 306, 311, one course from 330-334, and one elective.

The general psychology minor consists of six courses: 151, 250 or 306, one course from 330-334, and three electives including one additional 300-level course. One elective may be an interim course.

The core requirement in psychology is best met by 151. Education 301 satisfies the core requirements for students in teacher education programs and serves as a prerequisite for 200-level courses only.

151 Introductory Psychology. F and S, core. An orientation to many of the central concerns of psychology, this course includes consideration of such issues as perception and consciousness, learning and memory, motivation and emotion, personality development and social interaction, stress and adjustment. Students are introduced to the methods of psychological research and to the role of psychology in scientific endeavor and human application. The psychology core requirements for students in teacher education programs should be met by Education 301 rather than by this course. *Staff.*

201 Developmental Psychology: Lifespan.* S. An overview of human psychological development from birth to death. The primary objective is to understand the behavior characteristic of each stage of development and the psycho-social factors which influence that behavior. Not open to students who have taken or plan to take 204 or 207. Prerequisite: 151 or permission of the instructor. *Mr. W. Joosse.*

204 Developmental Psychology: Child.* 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.). Not open to students who have taken or plan to take 201. Prerequisite: 151 or permission of the instructor. *Mr. R. Stouwie.*

207 Developmental Psychology: Adolescent.* F. A study of the transitional years of human development from puberty to early adulthood. Emphasis is on developmental changes and on the tasks which the adolescent faces in his different roles. Not open to students who have taken or plan to take 201. Prerequisite: 151, Education 301, or permission of the instructor. *Mr. R. Stouwie.*

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: 151 or permission of the instructor. *Mr. J. De Boe.*

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: 151 or permission of the instructor. *Mr. G. Weaver, Mr. J. De Boe.*

216 Psychology of the Exceptional Child.* S. A basic overview of children who differ physically, mentally, or behaviorally from "normal" children. Emphasis on causal factors, characteristics, and diagnosis. Not open to students who have taken or plan to take Special Education 216. Prerequisite: 151 or permission of the instructor. *Mr. R. Stouwie.*

250 Statistics and Research Design.* F and S. An introduction to scientific research in psychology including the formulation of hypotheses, the design and execution of experiments, the analysis and interpretation of data through statistical procedures, and the communication of results. Two-hour laboratory each week. *Mr. A. Reynolds.*

306 History and Systems of Psychology.* 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 or permission of the instructor. *Mr. W. Sanderson.*

308 Experimental Psychology.* S. A continuation of 250 with an emphasis on general research methodology at both the conceptual and applied levels. Consideration is given to topics such as the scientific study of human behavior, the formulation of research problems and hypotheses, research design, statistical inference, decision making, and the writing of research reports. For major and others interested in the social, behavioral, and health sciences. Prerequisites: 151 and 250 or permission of the instructor. *Mr. R. Terborg.*

310 Social Psychology.* F and S. A study of how people think about, influence, and relate to one another. Attention is given to such topics as persuasion and attitude change, conformity and obedience, group conflict and decision making, stereotypes and illusions of social thought, attraction and prejudice, altruism and aggression. Students may not receive credit for this course and Sociology 310. Prerequisite: 151 or permission of the instructor. *Mr. M. Bolt, Mr. J. Brink.*

311 Theories of Personality.* S. An introduction to modern American and European theories concerning the psychological structure, dynamics, and development of the human personality. Prerequisites: 151, 212, or permission of the instructor. *Mr. W. Sanderson.*

312 Principles of Psychological Measurement.* F. An introduction to theoretical and practical issues of psychological testing as they relate to assessment, selection, and classification of personnel. Prerequisite: 250 or permission of the instructor. *Mr. A. Reynolds.*

313 Mental Health and the Classroom.* F. An introduction to the developmental needs and common developmental crises of school age children. Emphasis is on the methods of communication and classroom management which allow the teacher to promote healthy adjustment. (Previously 335.) Prerequisite: 151, Education 301, or permission of the instructor. *Mr. S. Stehouwer.*

314 Theories of Counseling and Psychotherapy.* F. An introduction to counseling and psychotherapeutic methods for dealing with emotional disorders. The course includes an overview of major approaches to counseling and psychotherapy with an analysis of the theoretical aspects and techniques employed. An attempt is also made to integrate these various approaches and to view them from a Christian perspective. Prerequisite: 311 or permission of the instructor. *Mr. S. Stehouwer.*

315 Practicum in a Clinical Setting.* S. 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. The purpose of this course is to explore the relationship of psychology to—or its involvement in—such areas as literature, religion, art, and morality. This course will develop a

Christian view of the historical and philosophical background of psychology. *Mrs. M. Vander Goot.*

323 Psychology and Religion.* F. A consideration of relationships between psychological explanations and religion. The course includes discussions of several major psychologies of religion, recent theory and research on the psychological dimensions of religious praxis, and the possible relationships between psychological and theological explanations of human action. Prerequisite: 151 or permission of the instructor. *Mr. G. Weaver.*

330 Psychology of Motivation.* S. A thorough discussion of the psychological study of motivation. Recent research findings as well as theory formation in the areas of emotion and motivation are included. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Mr. G. Weaver.*

331 Psychology of Sensation and Perception.* F. A detailed examination of the theories and research pertaining to various sensory and perceptual processes in human beings. Methodological, physiological, and pretheoretical issues are addressed. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. Not offered 1985–86.

332 Psychology of Learning Processes.* F. A consideration of the relationship of empirical findings and theoretical formulations to various learning processes. Included are such issues as the role of reinforcement and punishment; methods of enhancing or suppressing performance; biological limits on learning; stimulus generalization and discrimination learning; the structure and organization of memory; and factors related to forgetting and retention. The importance of learning theory for psychology in general is stressed. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Mr. R. Terborg.*

333 Physiological Psychology.* S. An intensive investigation of the physiological bases of behavior. Theories and research concerning the relationship between the nervous system and several aspects of behavior will be discussed. Discussion of the mind/brain problem. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Mr. J. De Boe.*

334 Cognitive Psychology.* A survey of research and theory in the study of human

thinking. The course covers the acquisition, representation, and use of knowledge with emphasis on the processes of attention, memory, language, and problem solving. Prerequisite: 151 or permission of the instructor. Not offered 1985-86.

390 Independent Study. F, I, S. Prerequisite: permission of the chairman.

395 Research Seminar.* F and S. The preparation, presentation, and discussion of papers based on current psychological literature and upon individual empirical research on selected topics. Prerequisite: 250 or permission of the instructor. *Staff.*

GRADUATE COURSES

510 Educational Measurement. This course provides a theoretical and practical background which will enable classroom teachers to construct or select tests for specific purposes. It is designed to enable teachers to use test scores wisely and effectively in the learning process. A major paper requires knowledge and application of the concepts of reliability and validity as well as practical considerations in the evaluation of a standardized test of the student's choice. *Mr. A. Reynolds.*

511 Introduction to Guidance and Counseling. A survey of principles, major theories, and resources which shape guidance and counseling efforts in the schools. The course focus is on how a teacher can best contribute to and benefit from those efforts. *Mr. S. Stehouwer.*

590 Independent Study. F, I, S. *Staff.*

595 Graduate Project. F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

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W13 The Common Sense Psychology, Philosophy, and Religion of William James. *The Dictionary of American History* refers to the thought of William James as the most sophisticated attempt to reconcile science and religion in the wake of Darwinism. This course involves the study of the thought and character of James and the ways in which he represented and influenced his times. Jacques Barzun's book *A Stroll with William James* as well as a portion

of works by James himself on psychology, philosophy, and religion are read and discussed. Daily assessment papers related to the assigned readings. At least one course in psychology or philosophy or contemporary western history is recommended as a prerequisite. *Mr. W. Sanderson.*

W15 Films and Fairy Tales. This course compares feature length film classics and familiar fairy tales for the purposes of investigating archtypical characters, tales of human struggle, and the relationship between struggle and character development. Each of the seven films are studied in tandem with one or more classic fairy tales. Analysis compares content, compares and contrasts oral tradition and modern fiction, and compares a non-visual and a visual medium as each functions to stimulate the process of psychological insight. Each student will be required to prepare a report and present it to the class as well as evaluate film reviews and keep a daily log. *Mrs. Vander Goot.*

W16 Psychology of Small Groups. An examination of the structures, processes, and performances of social groups. Attention is given to group problem-solving, decision-making, communication, leaderships, cooperation, and conflict. Lectures, group exercises, films. Three tests and one written report. *Mr. M. Bolt.*

W51 Knowing Yourself: The Psychology of Self Understanding. An introduction to contemporary theories and research about how people come to know and evaluate themselves and how self-judgments influence our emotions, desires, and actions. What are the limits and distortions of self-understanding? Can one's self-concept originate in development? How does self-understanding contribute to the way we deal with anxiety, depression, and pain? Class lectures, discussions of research, and a student project on personal self-understanding. Students will be responsible for a narrative life history that demonstrates their ability to apply appropriate principles and concepts; a major test; and a paper. Prerequisite: one course in psychology. *Mr. J. Brink, Mr. G. Weaver.*

W54 Educational Testing and Research Methods. This course should be valuable for anyone involved in education, especially those in the MAT or Special Education programs. Theory and practice are integrated. Opportunity is provided to

develop the art, knowledge, and skill required to handle measurement and research problems related to teaching. Teacher constructed tests, grading, and interpretation of both home-made and commercial test scores are discussed. Normative and criterion referenced instruments as they come to expression in essay and objective format are emphasized. Both descriptive and inferential statistics are approached from a intuitive rather than a mathematical perspective. There is an opportunity to develop skill in use of the computer. Several multiple choice tests including a final examination are given. Prerequisites: a working knowledge of eight grade arithmetic, junior or senior standing. *Mr. A. Reynolds.*

W55 Exploring and Researching Behavior. Some recent studies in psychology are reviewed and their conclusions are then tested in student-conducted experiments. Some possible examples of topics considered are: 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? In addition to regular course work students should plan to spend two to three hours per day conducting experiments either in the laboratory or in the field. Not intended for students who plan to take 308. Prerequisite: 151. *Mr. R. Terborg.*

W56 Child and Adolescent Psychopathology and Psychotherapy. This course is intended to be a review of theory, research, and technique in the development and remediation of emotional disorders in children and adolescents. Students are expected to become well acquainted with emotional disorders of childhood and adolescence, their possible causes, and appropriate methods of treatment, and attempt

to integrate these within the framework of the discipline of psychology and from a Christian perspective. Students will be expected to contribute informally in terms of class discussion, and formally, in terms of group projects to be presented in class. Topics covered by lectures, presentations, case studies, and demonstrations by the instructor, guests, and students include an overview of the various disorders of childhood and adolescence, e.g. anorexia nervosa, hyperactivity, and theories and techniques in psychotherapy and the children and adolescents e.g. family therapy, play therapy. Assigned readings, independent readings, one or more field trips to acquaint students with various diagnostic and treatment settings, and an examination. Prerequisite: 151. *Mr. S. Stehouwer.*

W57 Helping Skills. This course is intended for advanced students in psychology as well as others who will be working closely with people in relationships where communicating, helping, and managing are integral. Such helping relationships are found in the ministry, social work, medicine, law, management, and teaching as well as in counseling. The objectives are first: to learn basic principles of communication, listening, and helping; second: to develop skills in practice interviews using videotape and audiotape to receive feedback; third: to review theory and research on therapy and other helping relationships. The reading list will be available in December. Course requirements: brief text, journal articles, evaluated interviews, and one project paper. Prerequisites: 151, 212, or permission of the instructor. *Mr. J. De Boe.*

IDIS W51 The Bible and Psychology. *Mr. E. Johnson.*

Religion and theology

Professors **W. De Boer, H. Hoeks, J. Primus (chairman), G. Spykman, **L. Sweetman, H. Vander Goot, L. Vos
Assistant Professors T. Eves, P. Holtrop
Instructors D. Schuurman, T. Wolthuis
Multicultural Lecturer S. Kim

THE DEPARTMENT offers a major in Religion and Theology, a minor in Missions, a minor in Church Education, a teaching minor in the Academic Study of Religions, and several other departmental minor programs.

The major program in Religion and Theology requires ten courses including 103 or 108, 206, 301, 303, and 396. One interim course, approved by the department chairman, may be included in the required ten courses. An approved four-course sequence in another department is also required. Prerequisite to admission to the program is the completion of 103 or 108 with a minimum grade of C (2.0). The adviser for this program is the chairman.

For students interested in missions, there is a minor concentration in Missions consisting of six courses. Three courses are required: 203, 204, and Sociology 253; and three courses approved by the adviser are selected from the following: 305, Geography 210, Sociology 217, 311, Economics 337, area study courses (History 202, 203, 204, 205, 206, 207, 360, Spanish 372, 373), Multicultural Lecturer courses, an appropriate interim course. This minor program may be taken with a religion and theology major program. The adviser for this program is Mr. Leonard Sweetman.

The minor program in Church Education is for students preparing for the leadership of educational programs in churches. It requires Art 231, Music 236, or Religion 332; Psychology 151 and 201, 204, or 207; Religion 245, 246, and 319; and Sociology 311. This minor program may be taken with a religion and theological major program. Students who plan to serve as directors of education in churches should do graduate work in Church Education. The adviser for this program is Mr. Henry Hoeks.

The teaching minor leading to certification in the Academic Study of Religions requires six courses. All students complete a four-course sequence consisting of Religion and Theology 151, 305, 395, and Interdisciplinary 234. Two additional courses are chosen in consultation with the adviser of the program from the following: Art 231, Classics 231, History 201, 202, Philosophy 204, 205, Psychology 323, Religion and Theology 206, 207, 208, 301, 303, 311, 313, 327, 328, 332, Sociology 217, 311, or approved interim courses. Student teaching is offered only in the spring semester. The adviser for this program is Mr. Henry Hoeks.

There are three other departmental minor programs. One in Biblical Studies requires five courses from 103 or 108, 207, 208, 302, 327, 328, plus another core

course. The minor in Theological Studies requires five courses from 204, 206, 301, 303, 304, 308, 311, 312, 313, Idis 234, plus one Biblical Studies core course. The minor in Religion and Theological Studies requires 151 plus one course from each of the following categories: Biblical, Theological, Historical, Religio-cultural, and Missions and World Religions. An appropriate interim course may be included in any of these programs with the approval of the chairman.

The core requirements in religion and theology are met by selecting one from the following courses in Biblical studies: 103, 108, 207, 208, 327, and 328, 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.

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, intertestamentary, 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 108. Open only to freshmen and sophomores. *Staff.*

108 New Testament Biblical Theology. F and S, core. A more complete coverage of the biblical theology of the New Testament than can be offered in 103. Open only to freshmen and sophomores. *Staff.*

207 Old Testament Prophets. 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, and an exploration of their basic themes and their continuing relevance. Not open to freshmen. *Mr. C. Vos.*

208 New Testament Letters. 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. *Staff.*

302 Biblical Archaeology.* S. A study of the pertinent archaeological data which provide a background for or throw light upon the biblical narrative. Prerequisites: one course in Biblical Studies and junior or senior standing. Not offered 1985-86.

327 Old Testament Interpretation.* F, core. An intensive study of the basic principles and methods of biblical interpretation developed in the context of the biblical-theological themes of the Old Testament. Designed especially for departmental majors. Prerequisite: junior or senior standing. *Mr. C. Vos.*

328 New Testament Interpretation.* S, core. An intensive study of the basic principles and methods of biblical interpretation developed in the context of the biblical-theological themes of the New Testament. Designed especially for departmental majors. Prerequisite: junior or senior standing. *Mr. L. Vos.*

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. A study of major twentieth century Christian theologians against the background of eighteenth and nineteenth century philosophy and theology. Selected writings of significant contemporary theologians (such as Barth, Bultmann, and Tillich) are read and evaluated. Prerequisite: junior or senior standing. *Mr. H. Vander Goot.*

312 Early Christian Theology.* S, core. A study of the growth of the church and its 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. Prerequisite: junior or senior standing. *Mr. G. Spykman.*

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. Prerequisite: junior or senior standing. Not offered 1985-86.

HISTORICAL STUDIES

303 **General Church History.*** S, 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. J. Primus.*

304 **American Religious History.*** F, 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. Not open to freshmen. *Mr. J. Primus.*

RELIGIO-CULTURAL STUDIES

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 **Basic Christian Ethics.*** S, core. A biblical-theological study of moral issues, both personal and social, considering relevant ethical principles and practices as they

developed in the Judeo-Christian tradition. Prerequisite: junior or senior standing. *Mr. P. Holtrop.*

332 **Christian Liturgy.*** F. A study of the development, theology, and practice of Christian liturgy from its biblical beginning to the contemporary liturgical renewal movement. Synagogue and early Christian precedents, Roman Catholic and Eastern Orthodox liturgical development, Reformation protests and emphases, and the recent liturgical renaissance are examined. Prerequisite: one course in biblical studies, preferably 103. *Mr. N. Wolterstorff.*

The following interdisciplinary course may be applied to certain concentrations in the department:

234 **The Contemporary American Religious Situation.** *Mr. J. Primus, Mr. W. Smit.*

MISSIONS AND WORLD RELIGIONS

203 **Theology of Mission.** F. A survey of biblical material pertaining to mission. These materials are used in evaluating the contemporary problems of mission: i.e., re-nascent non-Christian religions, ecumenism, mission in the ferment of social revolution. Not open to freshmen. *Mr. L. Sweetman.*

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 1985-86.

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. Not open to freshmen. *Mr. L. Sweetman.*

RELIGION AND EDUCATION

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, the sociology of religion, and the philosophy of religion. This course also includes a consideration of the problem of "objectivity", an introduction to alternative pedagogical approaches to the study of religions, and exposure to materials and media appropriate to teaching religion studies as well as a study of court opinions relative to religion studies in both Canada and the United States. *Mr. L. Sweetman.*

245 Field Work in Church Education I. F, half course. An introduction to the educational ministry of the church through field observations and practical experiences in a local Christian congregation, through readings which relate educational theory to the student's practical field experiences, and through weekly class sessions in which students report on their field experiences and integrate them with their readings. Not open to freshmen. *Mr. H. Hoeks.*

246 Field Work in Church Education II. S, half course. A continuation of 245, which is a prerequisite. *Mr. H. Hoeks.*

319 Foundations of Religious Education.* S. This course begins with an historical survey of informal and formal religious educational practices from early Hebrew times to those of contemporary North American homes, churches, and schools. The course proceeds to a consideration of some salient socio-cultural, theological, and developmental considerations involved in religious education. Not open to freshmen. Not offered 1985-86.

390 Independent Study. *Staff.*

395 Seminar: Religion and Education. F. A course for seniors in the Academic Study of Religions minor. It includes practical and bibliography work and concludes with a major research paper. *Mr. H. Hoeks.*

396 Seminar: Religion and Theology. S. A course for senior majors in Religion and

Theology which provides a focus on significant theological issues and on theological bibliography. A major research paper is required. *Staff.*

GRADUATE COURSES

510 Old Testament Writings. F. A study of the Old Testament writings with a major emphasis on the Psalms, Proverbs, Job, and Ecclesiastes. The nature of wisdom and hymnic texts is pursued in the context of their historico-cultural background. Attention is paid to the didactic use of these texts. Prerequisite: two courses in biblical studies beyond the 100-level or permission of the instructor. Not offered 1985-86.

580 Perspectives, Programs, and Practices in Bible and Religion Curriculum. A study of various approaches in the schools to curriculum and teaching in biblical studies, church history, Reformed thought, and world religions. Consideration is given to the way fundamental differences of perspective on biblical Christianity influence the selection and use of curriculum designs, materials, and teaching techniques. Course content is adapted to the various grade levels of particular interest to enrollees. *Mr. H. Hoeks.*

590 Independent Study. F, I, S. *Staff.*

595 Graduate Project. F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's adviser. *Staff.*

JANUARY 1986 INTERIM

W10 Visual Symbols of the Christian Faith. Protestants are making increasing use of visual symbols in worship and education. Symbols can be found in church architecture, liturgical furniture and colors, banners, and vestments. In this course students will explore the origins of a variety of symbols in the Old Testament, New Testament, and selected segments of church history as well as the traditional uses of these symbols. Then through field trips and slides the class will examine contemporary depiction and use of visual symbols in the Catholic, Orthodox, Lutheran, and Reformed traditions. The course concludes with developing visual expressions of Christian symbols for personal or educational use. Readings, a Sunday worship as-

signment, some student presentations to the class, and accountability on weekly tests are required. *Mr. H. Hoeks.*

W11 Fiddlers on Our Roof: Jews in America. A survey and analysis of the American Jewish community. Attention is given to the origin and development of the three main religious divisions of American Judaism: Orthodox, Conservative, and Reformed; as well as to Reconstructionism and Zionism. An attempt is made to assess the reciprocal influences between Judaism and American culture. Special attention is given to current problems and trends, especially to the impact of the Holocaust and Zionism on American Jews. Lectures, discussions, books, articles, films, student papers, guest speakers, and field trips. Students will write a paper plus a daily journal. *Mr. J. Primus.*

W12 The Most Puzzling Book of the Bible: Revelation. A study of the Revelation of John which acquaints the student with the content, history of interpretation, recent interpretations, and meaning of the Revelation of John for today. Students will study commentaries, write a short paper, and have tests. Seventeen days of intense Bible study! *Mr. L. Vos.*

W13 The Christian Gospel in Non-Christian Cultures. Do cultural differences make a difference in bringing the Gospel? This is a problem as old as the Gospel itself. The Apostles already faced it. The Gospel spread to the Gentile world, a culture quite different from that of Jesus and the Old Testament. What happened when the two met? This course studies how the New Testament and the early church attempted to bridge the chasm of religious and cultural differences in preaching the Gospel. The class will seek guidelines for today. Readings and an examination. *Mr. S. Kim.*

W14 Under Hitler: German Christians. The 1930s and 40s were difficult times for German Christians. With the nation near political and economic collapse, Adolf Hitler suddenly came to power with a lively program for the German nation. There was a new spirit in the land. Patriotic fervor and nationalistic ideology ran high. The church for centuries had been a state church, the church of the German people, the German church. Now what about Hitler and this new sense of national purpose? For Christians there was tension: Christ is Lord and

Savior for all mankind, but we are Germans, the German church. Can one be both German and Christian? This course seeks to relive this period of great confusion, temptation, and struggle for German Christians and to trace some of the consequences of the Hitler period for Christianity in Germany today on both sides of the Iron Curtain. There are lessons here for Christians throughout the world. Readings and an examination. Taught by a Reformed pastor in the West German church. *Mr. L. Coenen.*

W50 Israel: The Land of the Bible. This on-the-site study of the land of Israel includes considerations of geography, topography, people, flora, fauna, culture, climate, and history for the purpose of illuminating the biblical story. Lectures, readings, and visits. Students will use a Bible atlas both in the classroom and on site and will be responsible for a reading list prior to departure, a list that includes pertinent periodicals such as the *Biblical Archaeological Review*. An additional reading list is available for students with a special interest in modern Israel and an opportunity is provided for them to visit relevant places and institutions. Cultural events are included. A daily journal is required; a paper on assigned readings is required for honors. Fee of approximately \$1,900. A three-day extension to Egypt or Athens is optional for an additional fee. Prerequisite: permission of the instructor. Off-campus. *Mr. C. Vos.*

W52 Lives of Great Theologians. Theology is a window on our world. The way we theologize about things is part and parcel of our total life experience. This holds also for great Christian theologians. They too are real people. And their theologies are an index to the crises of their times. What made Augustine, Luther, and Calvin tick the way they ticked? To what extent did the French Revolution create Kuyper? And World War I create Barth? And World War II create Bonhoeffer? What factors account for Hoeksema, Machen and Van Til? Can theology transcend history? This course is about theology; but even more it is about theologians—especially those whose lives directly touch our times. Participants will let them (perhaps mostly others) tell their story through wide-ranging biographical readings, accompanied by in-depth analysis and critique. Format: readings, casual research, class reports,

and a culminating paper calling upon students to reflect on their own theological pilgrimages. Prerequisite: junior or senior status. *Mr. G. Spykman.*

W54 From Calvin to Calvinism. A study of what went right and what went wrong in the development of Calvin's theology. The course concentrates on Calvin and the revision of his thought by his successor, Theodore Beza, and seeks to shed light on why we are where we are in current Reformed discussions. Calvin's creation orientation is contrasted with predestination orientations in later Calvinism. Assigned and optional readings in Calvin, Beza, Ames, Edwards, Hoeksema, Barth, Berkouwer, Daane,

Boer, and other sources. References to current discussions in *The Banner*, *The Reformed Journal*, *The Outlook*, and other periodicals. Student short papers and class presentations, with option of a larger paper or take-home examination. Reading list available in December. Prerequisite: 206 or permission of the instructor. *Mr. P. Holtrop.*

IDIS W17 Rock 'N' Roll in American Society. *Mr. W. Romanowski.*

IDIS W54 Christian Neo-Conservatism: Another Viewpoint on Politics, Economics, and Society. *Mr. G. Harris, Mr. H. Vander Goot.*

Sociology and social work

Professors G. De Blaeij, P. De Jong, H. Holstege, R. Rice, T. Rottman, W. Smit (chairman), D. Smalligan, D. Wilson

THIS DEPARTMENT OFFERS courses in sociology, criminal justice, social work, and anthropology. Sociology is the study of the principles of group relationships, social institutions, and the influence of the group on the individual. Criminal justice is the study of the nature of crime in society and the interrelationship among criminal law, social order, and social justice. Social Work is the study of the application of these principles and related theories to the helping professions. Programs in the department may lead to a departmental major in sociology, a group major in criminal justice, and a supplementary concentration in social work, which is open to both sociology and non-sociology majors.

The major concentration in sociology consists of 151, 318, 320, and six additional sociology courses. One interim course may be included among these six additional courses. Students who spend a semester at the Chicago Metropolitan Study Center may apply some of that work to a departmental major. For admission to the major program, a student must complete 151 with a minimum grade of C (2.0).

The twelve-course group major in criminal justice provides the theory, context, and practice needed to qualify graduates to make informed decisions in the area. Seven courses must be taken in the Department of Sociology and Social Work: 151, 300, 301, 306, 313, and two course units from either 380 or Political Science 380. The remaining courses provide a foundation for a broad range of criminal justice vocations. Two courses must be selected from either Political

Science 201, 202, 209, 210, 310 or from Psychology 212, 211, 310, 311; a third course is chosen from any of these or from an approved interim; and two courses must be chosen from Philosophy 202, 207, and either 205 or Religion 311. The adviser for this program is Mr. W. Smit.

The group major prepares students for a variety of careers in law enforcement, working with the courts, and assisting with corrections and is helpful to those who expect to be involved with probation, parole, detention homes, half-way houses, police and security work, rehabilitation centers, and correctional facilities.

The supplementary concentration in social work consists of six courses, five of which are drawn from the departmental offerings in social work. The supplementary concentration includes three types of courses: social work theory courses, field work courses, and other courses which most nearly complement the practice of social work. The program consists of 300, 301, 303, two units of credit from 380 and 381 plus one additional course from approved psychology or sociology courses. A fuller description of the supplementary concentration in social work is available in the departmental office. The social work courses prepare one to work not only with individual clients in counseling situations but also to work in social institutions, and, when necessary, for change within these very institutions. Consequently this supplementary concentration prepares one to work in various capacities in both private and public organizations. All students in this concentration are required to have at least three hundred hours of field work. These placements are available with over fifty different private and governmental organizations.

The core requirement in sociology may be met by 151 or 217. Sociology 217 and 311 may be a part of the teaching minor in the academic study of religions.

SOCIOLOGY COURSES

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. A critical analysis and evaluation of fossil man and human evolution. Various Christian positions regarding these issues will be examined. The issues in the present "creation-evolution controversy" will also be evaluated in the light of Scripture and the teachings of the church. *Mr. D. Wilson.* Not offered 1985-86.

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.*

253 Intercultural Communication. F and S. An examination of the anthropological principles relating to cross-cultural communication. This examination requires an extensive comparison of the components of cultural systems and the nature of cultural dynamics. The areas of application include government, business, peace corps, development, and mission work, with special emphasis on the last two. Special topics include developing an appropriate attitude regarding indigenous cultures and the management of culture shock. *Mr. D. Wilson.*

302 Urban Sociology and Community Organization.* F. 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 contempo-

rary issues as community development and planning. *Mr. J. White.*

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. 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. P. De Jong, Mr. T. Rottman.*

308 Population and Society.* F. This 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; a 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 an analysis of the causes and consequences of population size, distribution, and composition for human society. Not offered 1985-86.

309 Sociology of Education.* 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 the teacher. Not offered 1985-86.

310 Social Psychology.* F. Human behavior is 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. Students may not receive credit for this course and Psychology 310. *Mr. G. De Blacy.*

311 Sociology of Religion.* 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.* Not offered 1985-86.

312 The Sociology of Community.* 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. Not offered 1985-86.

313 The Criminal Justice System.* F. A study of the nature of crime in society and the interrelationships among criminal law, social order, and social justice. Attention is given to theories and definitions of crime, its cause and control; changing ideas about the role of police, court, and prison personnel; and the place of the Christian community in developing and maintaining an improved system of criminal justice. *Mr. T. Rottman.*

314 Contemporary Social Problems.* S. Two different social problems will be studied this year. Those in Section A with Mr. T. Rottman will study cultural and social responses to death and dying. The study will begin with a theoretical examination of social problems generally and will relate these theories to the particular problems associated with death and dying and how they are viewed by contemporary society and by the dying person himself. The concepts and customs surrounding death and dying will be examined to determine how functional they are in their own terms and how compatible they are with biblical norms. Those in Section B with Mr. J. White will be concerned with ethnic relations and dynamic interaction among ethnic groups. Values, norms, roles, and institutions are investigated in terms of racism, ethnic pluralism, and assimilation. The perspective is worldwide, but the emphasis is on the United States.

315 Sociology of Sport.* S. A study of the social and social-psychological dynamics of sports in modern society. Areas receiving special attention are youth sports, interscholastic sports, and professional sports. Emphasis is put on describing and understanding sports participants and observers and the relationship of sport as an institution to the rest of social structure. *Mr. G. De Blacy.*

316 Social Gerontology.* S. A cross-cultural examination of how various societies react toward the elderly. Specific substan-

tive issues included are: discrimination against the elderly, familial relationships, social security, nursing home services, housing needs, and employment opportunities. There is an analysis of proposed changes in American society which would give assistance to senior citizens. *Mr. H. Holstege.*

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.*

320 Sociological Research.* S. An assessment of the nature of the research process as applied to the study of theoretical problems in social science. Students are guided 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. *Mr. W. Smit.*

390 Independent Study. F, I, S. Prerequisite: permission of the chairman and of the instructor. *Staff.*

395 Seminar.

SOCIAL WORK COURSES

300 Social Welfare Policy and Services. F. An analysis of the social welfare system. Social welfare institutions and specific policy areas which influence current social work services are examined. The application of specific policies to income maintenance, mental health, poverty programs, and corrections are some of the areas covered. Prerequisite: 151 or permission of instructor. *Mr. J. Bradford.*

301 Social Work Practice. S. Students are taught the techniques of social work with an emphasis on how basic social work concepts are related to professional practice. Prerequisite: 300 or permission of instructor. *Mr. W. Van Woerkom.*

303 Child Welfare and Family Services.* F. 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. *Mr. W. Van Woerkom.*

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.*

381 Practicum in Clinical Social Work. S. This course provides an opportunity for the student to relate social work knowledge to a clinical setting. Various roles and modes of clinical social work are studied from a Christian perspective. The social worker's role is related to those of other professionals such as the psychiatrist, the clinical psychologist, the adjunctive therapist, the psychiatric nurse, and the rehabilitation therapist and to the part each plays in the clinical team. Each student is assigned to a staff social worker who will supervise his direct work with patients. Prerequisites: junior-senior status, 300 and 301, and departmental approval. *Mr. D. Smalligan.*

GRADUATE COURSES

501 School in Community. A study of the reciprocal relationship between the school and the community. Particular attention is paid to the interrelationship between the school and religious, familial, political, and economic institutions. *Mr. G. De Blaey.*

590 Independent Study. F, I, S. *Staff.*

595 Graduate Project. F, I, S, full or half course. The prospectus for each Master of Arts in Teaching project must be developed under the supervision of a faculty member and must be approved by the student's graduate adviser. *Staff.*

JANUARY 1986 INTERIM

W10 Aging and Minorities. This course is designed to help students learn more about

the aging patterns and processes found among various minority groups within American society. The groups surveyed include but are not limited to Black Americans, Hispanic Americans, and Women. Topics include: the demographic, social, and psychological aspects of the minority aged, as well as, concerns for the future of minority aging. Readings, quizzes, and an oral presentation are required. *Ms. M. Loyd-Paige.*

W11 Protestantism and the Rise of Sports. A socio-historical analysis of the position of mainline Protestantism toward sports. The major focus is on the nature and extent of impact that religious institutions have had on the rising popularity of sport in America during the last century. Textbook material is supplemented by documents drawn from journals and the other media. Test, quizzes, oral and written reports. *Mr. G. De Blae.*

W12 Single Life. A study of the place of single people in contemporary society. Topics include common life styles, stereotypes, problems, and opportunities. Lectures, discussions, readings on problems and opportunities of being single, with special attention given to lifestyles, social experiences, and behavioral outcome. A few guest speakers, several tests, and one five-page paper are also included. *Mr. W. Smit.*

W52 Prison: A Problem or a Solution? Too frequently we assert that "prisons don't work" without paying careful attention to the multiple and often conflicting expectations we have of them. Nor is careful attention given to possible alternatives to imprisonment, particularly those which are most compatible with a Christian sociological perspective. Students in this course will examine the historical impact that diverse images of man and society have had on the prison movement, as well as the contemporary status of prisons—particularly their relationship to philosophies and practices involving public safety, deterrence, rehabilitation, and moral retribution. They will consider possible alternatives to incarceration—such as restitution, communityservice, traditional probation, and diversion—and examine the role of prosecutorial, judicial, and administrative discretion. Lectures, class discussions, films, and a limited number of field visits which involve full-day commitments. Tests on the readings and a

final examination. Permission of the instructor. *Mr. T. Rottman.*

W54 Liberian Interim Abroad. This course examines the various aspects of Liberian culture today: a traditional village, a village undergoing rapid cultural change due to the presence of a multinational corporation, and the modern, Westernized capital of Monrovia. The contrasts between the traditional and Western, non-Christian and Christian, and rural and urban are studied. Lectures are given by various Liberians regarding aspects of their culture and by non-Liberians regarding their work in Liberia. The four texts for this course will be available for reading prior to departure to Liberia. A journal which both records daily experience and attempts to interpret them in the light of Liberian culture is required while in the country. Student evaluations are based on the journal and one's participation in the daily discussion sessions. Approximate cost of \$2,000. Prerequisite: permission of the instructor. *Mr. D. Wilson.*

W55 The Child Care Worker. For many college graduates, the position of child care worker is their first job in the human services field. However, many persons have had very limited training for such responsibilities. This course helps the student to understand the role and function of the child care worker with attention to effective techniques and avoidance of burn out. This course includes interviews with child care workers and former residents from residential treatment centers, field case studies, role plays, and a final examination. Lectures, discussions, test, and a paper. Textbooks and manuals will be available in December. Prerequisite: junior or senior status or permission of the instructor. *Mr. D. Smalligan, Mr. A. VerKaik.*

W57 Conducting the Helping Interview. A basic course in teaching interviewing skills for those who wish to enter a helping profession. Focus is on the initial interview; it is not on diagnosis and treatment. Primary emphases are an overview of the most prevalent personality theories, training in empathy and active listening skills, practice of these skills in videotaped roleplays, and building the relationship. Lectures, roleplays, videotapes, films, and speakers from the community. Prerequisite: junior or senior status. *Mrs. S. Bruggink, Mrs. S. Verwys.*

W58 Social Work Treatment in the Mental Health Setting. This course focuses on the nature and responsibilities of the social worker in a mental health setting, identifying necessary methods and skills of treatment and increasing awareness of and in-

terest in social work in mental health settings. Lectures, class presentations, and field trips. Case studies, a paper, and an examination. Prerequisite: junior or senior status or permission of the instructor. *Mr. D. Vander Steen, Mr. W. Postmus.*

Spanish

Associate Professors S. Clevenger, E. Cortina (chairman)
Assistant Professors M. Boelema, Y. Byam
Instructor M. Bierling

PROGRAMS FOR STUDENTS wishing to major in Spanish are worked out individually by the chairman. To be eligible a student must have completed at least two courses with a minimum average of C (2.0) and must have completed 101-102, 121-122, or the equivalent.

The typical major requires ten courses beyond 102 or 122 and must include 123, 201, or the equivalent, 215, 216, 217, 218, and four 300-level literature courses. Six course minors are also possible.

Teacher education majors require nine college-level courses including 215, 216, 217, 218, 360, and one from 371, 372, or an interim in Mexico or Spain. The minor requires six college-level courses and should include 215, 216, 217, and 218. Students in teacher education must pass a Spanish proficiency examination prior to the teaching internship which is offered only during the spring semester. The adviser for these programs is Mrs. Ynés Byam.

During the spring semester Calvin offers a full-time language program in Spain by which students can complete 101, 102, 201, and 202, satisfying the core requirements for a bachelor of science degree. The college also has a working relationship with the Universidad Iberoamericana in Mexico City, permitting students to study there during the interim or either semester. The adviser for these programs is the chairman.

The fine arts core may be met by 217, 218, and 300-level literature courses.

LANGUAGE

Students in Calvin's Semester in Spain program, which is taught during the second semester of each year in Denia, Spain, receive credit for 101, 102, 201, and 202.

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 but who, on the basis of a placement test, are

not prepared for 201. The course is also open with the permission of the department to students in the teacher education programs who have had no foreign language in high school. *Staff.*

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 other equivalents. *Staff.*

202 Intermediate Spanish. F and S. Continuation of 201. *Staff.*

215 Advanced Grammar and Conversation. S. A course for the student who wishes to improve his facility in the language, who is preparing for graduate study, or who expects to teach Spanish. The course includes the intensive study of grammar, vocabulary, and idioms as well as intensive use of drills and exercises to develop competence in speaking and writing idiomatic Spanish. The emphasis is on improved pronunciation and fluency through conversation, debates, and oral presentations. Prerequisite: 202 or its equivalent. *Mrs. Y. Byam.*

216 Advanced Composition and Translation. F. Extensive work in composition and translation to develop skill in written communication for students interested in teaching or in continuing their studies in graduate school. Reading selections by well known writers from various genres serve as models. A major paper in Spanish is required. Prerequisite: 202 or approval of instructor. *Mrs. E. Cortina.*

LITERATURE

217 Readings in Spanish Literature. F. An introduction to the major writers and movements in Spanish literature from the Middle Ages to the present. Conducted in Spanish. Prerequisite: 202. *Mrs. S. Clevenger.*

218 Readings in Latin American Literature. S. An introduction to the major writers and movements in Latin American literature from the New World conquest to the present day. Conducted in Spanish. Prerequisite: 202. *Miss M. Boelemma.*

303 The Spanish Novel. A study of the Spanish novel from *La Celestina* to the present requiring the reading and interpretation of selected chapters from outstanding novels as well as of complete works. The emphasis is on the chief characteristics of

the various types of novels. Conducted in Spanish. Prerequisite: 217. Not offered 1985-86.

305 Spanish Poetry. A study of the characteristics of Spanish poetry by means of extensive readings and detailed examination of the works of the major poets from the Middle Ages to the present. Conducted in Spanish. Prerequisite: 217. Not offered 1985-86.

306 Latin American Poetry. A study of the history and characteristics of Latin American poetry from the colonial period to the present. Conducted in Spanish. Prerequisite: 218. Not offered 1985-86.

307 The Latin American Novel. A study of the novels of Latin America with particular emphasis on those written during the last two centuries. Attention is given to the historical setting and to the intrinsic literary value of each novel. Conducted in Spanish. Prerequisite: 218. Not offered 1985-86.

309 Spanish Drama. F. A study of the dramatic expression of Spain in the Golden Age and through the post-Civil War era. Conducted in Spanish. Prerequisite: 217. *Mrs. E. Cortina.*

CIVILIZATION

360 Spanish-English Linguistics. *F. An examination of the differences between the English and Spanish languages, particularly those involving sound, spelling, structure, and vocabulary. Students will investigate stress, pitch, juncture, rhythm, phoneme, allophone, morpheme, and the diagramming of grammatical constituents in order to improve their own communication skills in both languages and to understand the errors made by those learning a second language. Testing and assessment of language skills is discussed. The course is planned primarily for those interested in bilingual education but it is useful for others wanting to understand linguistics. Prerequisite: 202. *Mrs. M. Bierling.*

371 Civilization of Spain. S. A study of the non-literary expressions of the Spanish mind and culture, of the history of Spanish social, political, and religious institutions, and of current problems in Spanish life. The course complements and enriches literary studies. Conducted in Spanish. Prerequisite: 202 or the equivalent. Not offered 1985-86.

372 Latin American Civilization. S. This course introduces the students to the culture of Latin America. Material covered includes historical backgrounds of the various countries; political, social, and religious institutions and values; and non-literary expressions. Reading materials include literary and non-literary sources. Conducted in Spanish. Prerequisite: 202 or the equivalent. Not offered 1985-86.

373 Hispanic Culture in the United States. *F. A study of the history and culture of Hispanic groups in the United States, their political, social, and religious institutions, and their value systems. The course is planned to assist students in understanding the cultural contributions of each Hispanic group within the broader American culture. Reading materials include literary and non-literary sources. Prerequisite: 202. Mrs. Y. Byam.

390 Independent Study. *F, I, S. Prerequisite: permission of the chairman.

395 Seminar.*

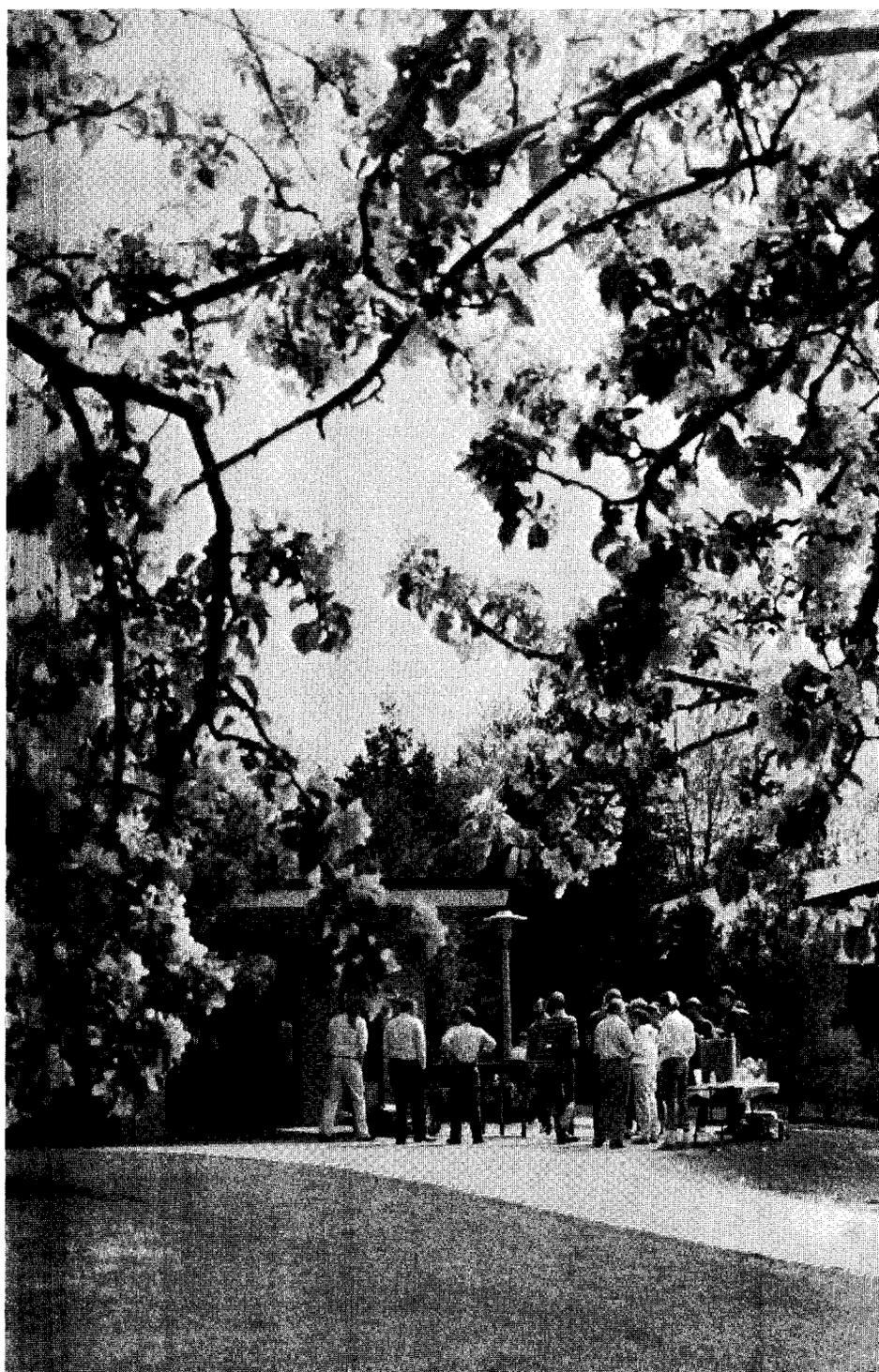
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W10 Visual Portraits of Spanish Literature. Students will study the key works of Spanish literature and learn how this literature is reflected in the art and architecture of its time. The primary focus is on the period from the Baroque to the present. Students will read English translations of authors such as Cervantes, Garcia Lorca, and Cela. This course is designed to give a general view of Spanish artistic expression to the non-Spanish major or minor. Readings and lectures are in English and are complemented by speakers and slide presentations. Paper and oral presentations. Mrs. S. Clevenger.

W11 Introduction to Spanish Culture. This course is an introduction to all aspects of Spanish life--race, history, religion, government, family, cuisine, music, courtship, and style of life in general. Particular emphasis is placed on the primary differences between Hispanic and North American cultures. In addition, students will be introduced to survival Spanish, learning the basic vocabulary and idioms needed for communicating in a Spanish-speaking community. The course prepares students to move into a Spanish society with understanding and with a minimum of stress and discomfort. Students planning to participate in Calvin's Study in Spain program are advised to register for this and are given priority at registration. Examinations in both culture and language. Does not meet foreign culture requirements of professional programs. Mrs. E. Cortina.

W50 Spanish Interim in the Dominican Republic. Students will spend four weeks in Santo Domingo studying at the *Universidad Catolica Madre y Maestra*. Students will hear lectures on selected topics in Caribbean culture, spend three hours in class daily, and meet all regular course requirements including a paper and examination. They will be studying the history, geography, sociology, culture, economics, and politics of the Caribbean region, as well as the Spanish language. They will be examining the culture from different points of view--the Reformed point of view will be provided by the instructor of local missionaries and the Catholic point of view by the university instructor. Fee required. Prerequisites: 201 or its equivalent and permission of the instructor. Off-campus. Mrs. Y. Byam.

122 Intermediate Spanish. From the sequence 121-122-123 which covers the requirements for language. Prerequisite: 121 or its equivalent. Miss M. Boelma.



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Conrad J. Bult, M.A.L.S., *Assistant Library Director, College-Related Matters*
Peter De Klerk, M.Div., M.Ln., *Assistant Library Director, Seminary- Related Matters*
Samuel J. Anema, M.S., *Director of Computing Services*
M. Howard Rienstra, Ph.D., *Director of the H.H. Meeter Center for Calvin Studies*
Herbert J. Brinks, Ph.D., *Curator of the Colonial Origins Collection*
Charles R. Young, M.Div., Ph.D., *Director of Exhibitions*

BUSINESS AFFAIRS

Henry De Wit, M.B.A., *Vice-President for Business and Finance*
Lester Ippel, *Controller*
Edward Timmer, *Chief Accountant*
Jay Timmer, B.A., *Director of Physical Plant and Security*
Keith Johnson, B.A., *Manager of the College and Seminary Stores*
Robert Struyk, B.A., *Director of Special Events*
Robert J. Doornbos, B.A., *Chief Security Officer*

COLLEGE ADVANCEMENT

Peter Vande Guchte, M.B.A., Ed.D., *Vice-President for College Advancement*
Wayne K. Hubers, M.A., *Director of Scholarships and Financial Aid*
Thomas A. Van Wingerden, B.A., *Assistant Director of Financial Aid*
Patricia L. Haan, M.B.A., *Financial Aid Counselor*
Peter M. Harkema, M.A., *Admissions Development Director*
James R. Van Wingerden, B.A., *Assistant Director of Admissions Development*
Connie Bilthouse, B.A., *Admissions Counselor*

Terri F. Harris, B.A., *Admissions Counselor*
 Karen Bode Houseman, B.A., *Admissions Counselor*
 Dale D. Kuiper, B.S., *Admissions Counselor*
 Jeanne Jonker Nienhuis, B.A., *Admissions Counselor*
 Julie A. Youngsma, B.A., *Admissions Counselor*
 Donald Lautenbach, M.A., *Director of Admissions*
 Donald G. Distelberg, B.A., *Director of Development*
 William J. Alphenaar, M.S., *Assistant Director of Development*
 Fred L. De Haan, *College Relations and Development Assistant*
 John C. Heerspink, M.Mus., *Director of Planned Giving*
 Michael J. Van Denend, M.A., *Director of Alumni Relations*
 Thomas J. Ozinga, M.A., Ph.D., *Director of College Relations*

STUDENT AFFAIRS

Donald L. Boender, M.A., *Acting Vice-President for Student Affairs and Dean of Men*
 Marilyn E. De Boer, M.S.W., *Dean of Women*
 William K. Stob, B.D., Th.M., Ed.D., *Dean of Student Life*
 Dale Jay Cooper, B.D., *College Chaplain*
 John W. Verwolf, M.Ed., *Director of Placement*
 Warren J. Boer, B.D., M.A., D.Min., *Director and Counselor in the Broene Center*
 Anamarie Joose, Ed.S., *Counselor in the Broene Center*
 James M. Hollebeek, M.A., Ed.S., *Counselor in the Broene Center*
 Robert La Fleur, M.D., *College Physician*
 Judith Eppinga, R.N., *College Nurse*
 Anne Hein, M.A., *Coordinator, Knollcrest East Residence Center*
 Barbara Johnson, M.A., *Assitant Coordinator, Knollcrest East Residence Center*
 James Arringdale, M.A., *Residence Director, Schultze-Eldersveld Halls*
 Scott Melby, M.A., *Residence Director, Beets-Veenstra Halls*
 Gregory Lehr, B.A., *Residence Director, Boer-Bennink Halls*
 Eric De Nijs, M.A., *Residence Director, Rooks-Van Dellen Halls*
 Susan Koppendrayner, *Residence Director, Bolt-Heyns-Timmers Halls*
 Robert Reed, M.A., *Residence Director, Noordewier-Vander Werp Halls*

Committees

ACADEMIC AFFAIRS COMMITTEES

Academic Standards Committee, B. Ten Broek (1987, chairman), S. Clevenger (1988), S. Greydanus (1987), D. Lautenbach, A. Reynolds (1986), E. Van Vugt, and one student.
Academic Support Committee, B. Vande Kopple (1986, chairman), E. Diephouse, G. Talsma (1988), G. Weaver (1987), and two students.
College-Seminary Library Committee, C. Bult, J. Hamersma (1987), M. Monsma, D. Ratzsch (1988), R. Van Dragt (1986), G. Van Harn, and one student.
Computer Services Committee, S. Leestma (1988, chairman), S. Anema, M. Bolt (1987), H. De Wit, R. Griffioen, S. Haan (1988), E. Van Der Heide (1986), and one student.
Continuing Education Committee, D. Oppewal, (1986, chairman), J. Brothers (1987), H. Holstege (1988), R. Honderd (1987), C. Kass, D. Rubingh (1988).
Educational Policy Committee, G. Van Harn (chairman), H. Baron (1988), R. Griffioen, G. Monsma (1987), R. Rice, J. Van Zytveld (1986), L. Vos (1988), M. Zuidema (1987), and one student.

- Graduate Studies Committee*, D. Diephouse (1986, chairman), Ed. Boeve (1988), H. Hoeks (1986), C. Kass, C. Mulder (1987), K. Piers (1988), C. Walhout (1987), and one graduate student.
- Governing Board, Calvin Center for Christian Scholarship*, G. Spykman (1986, chairman), B. Carvill (1986), A. Diekema, R. Rice, G. Van Harn, H. Van Till (1988), R. Wells (1987), and an alumnus, a board member, and a retiree.
- Governing Board, H. H. Meeter Center for Calvin Studies*, B. Armstrong (1987), C.-M. Baldwin (1987), D. Cooper (1986), J. De Jong, A. Diekema, R. Kingdon, F. Klooster (1986, chairman), H. Zwaanstra, and a board member.
- Interim Term Committee*, Er. Boevé (1987, chairman), R. Hoksbergen (1986), C. Miller, C. Stapert (1988), G. Van Zwalenberg (1988), C. Young (1987), and one student.
- Professional Programs Committee*, G. Van Andel (1987, chairman), A. Gebben (1988), P. Lucasse (1986), R. Griffioen, M. Vander Wal (1988), S. Van Der Weele (1987), E. Van Vugt, and one student.
- Social Research Center Governing Committee*, W. Smit (chairman), J. Brink (1986), D. Smalligan (1987), P. Vande Guchte.
- Teacher Education Committee*, U. Zylstra (1988, chairman), H. Aay (1986), P. De Boer (1986), C. Kass, J. Lamse (1987), A. Noteboom (1988), L. Stegink (1986), S. Stehouwer (1988), and one student.

BUSINESS AFFAIRS COMMITTEES

- College Store Committee*, D. Smalligan (1986, chairman), K. Johnson, C. Sinke (1987), and two students.

COLLEGE AFFAIRS COMMITTEES

- College Relations Committee*, R. Wevers (1987, chairman), D. Distelberg, E. Douma (1988), P. Harkema, C. Overvoorde (1986), T. Ozinga, P. Vande Guchte, M. Van Denend, a board member, and one student.
- Priorities Committee*, D. Van Baak (1987, chairman), D. Boender, W. Bratt (1988), H. De Wit, A. Diekema, C. Knot, C. Orlebeke (1987), J. Penning (1986), S. Roels (1986), P. Vande Guchte, G. Van Harn, and two board members.
- Special Events Committee*, R. Slager (1987, co-chairman), M. Vande Guchte (1986, co-chairman), M. Bakker (1986), M. Bierling (1987), R. Blankespoor (1987), C.A. Danford (1986), L. De Lange (1988), J. Duyst (1988), C. Kaiser (1987), M. Mustert (1988), J. Vanden Bosch (1987), N. Van Noord, and one student.

CULTURAL AFFAIRS COORDINATING BOARD

- Cultural Affairs Coordinating Council*, M.A. Walters (1986, chairman), K. Bratt (1987), A. Otten (1988), W. Stob (secretary), and two students.
- Communications Board*, K. Bratt (1986, *Dialogue*), D. Hettinga (1986, *Chimes*), P. Oppewall (1987, secretary), C. Overvoorde (1986, *Prism*), Q. Schultze (1986, WCAL), and six student members.
- Film Arts Committee*, J. Worst (1986, mentor), D. Holquist (1987), I. Kroese (1988), W. Stob (1988), and five students.
- Fine Arts Guild*.
- Homecoming Committee*, C. Huisman (1988), W. Stob, M. Van Denend, and five student members.
- Lectures Committee*, G. Harper (1988, mentor), D. Van Kley (1987), and three students.

FACULTY AFFAIRS COMMITTEES

- Committee on Committees*, A. Diekema (chairman), B. Bosma, R. De Vries, J. Van Zytveld, P. Zwier, U. Zylstra, and one student.

Multicultural Lectureship Committee, R. De Kock (1986, chairman), J. Dodge (1986), R. Rice, D. Wilson (1988), S. Wykstra (1987), a board member and two students.

Professional Status Committee, A. Diekema (chairman), J. Primus (1986), D. Topp (1988), M. Vander Goot (1986), G. Van Harn, E. Van Kley (1987), P. Zwier (1987).

STUDENT AFFAIRS COMMITTEES

All-Campus Discipline Committee, J. Timmerman (1987), A. Bratt (1988), L. De Lange (alternate), R. De Vries (1986), C. Hegewald (1988), W. Stob (secretary), R. Terborg (1986), D. Zuidema (1987), and five students.

Athletics Committee, R. Bolt (1986, chairman), P. Boonstra (1988), R. Stouwie (1987), K. Wolters (1987), and two students.

Chapel Committee, H. Slenk (1988, chairman), D. Cooper (secretary), D. Laverell (1987), and six students.

Scholarships and Aids Committee, C. Strikwerda (1988, chairman), H. Bonzelaar (1987), W. De Boer (1986), H. Hubers (secretary), D. Lautenbach, E. Van Vugt, T. Zwier (1988), and two students.

Student Conduct Committee, W. Sanderson (1986, chairman), D. Boender (secretary), B. Timmermans (1988), H. Vander Goot (1988), D. Vroon (1987), and four students.

Student Life Committee, A. Joosse (1988, chairman), W. Boer, D. Cooper, T. Hoeksema, G. Huizenga (1987), G. Klaasen (1988), W. Stob (secretary), and three students.

DEPARTMENT AND DIVISION ORGANIZATION AND CHAIRMEN

Division of Language, Literature, and Arts, Rodger Rice, *chairman*

Art, Helen Bonzelaar, *chairman*

Classical Languages, George Harris, *chairman*

Communication Arts and Sciences, David Holquist, *chairman*

English, Edward Ericson, *acting chairman*

French, Claude-Marie Baldwin, *chairman*

Germanic Languages, Barbara Carvill, *chairman*

Music, Howard Slenk, *chairman*

Spanish, Elsa Cortina, *chairman*

Division of Social Sciences, Rodger Rice, *chairman*

Economics and Business, Eugene Dykema, *chairman*

Physical Education, James Timmer, *chairman*

Political Science, James De Borst, *chairman*

Psychology, Roger Stouwie, *chairman*

Sociology and Social Work, William Smit, *chairman*

Division of Natural Sciences and Mathematics, Roger Griffioen, *chairman*

Biology, William Beebe, *chairman*

Chemistry, Kenneth Piers, *chairman*

Engineering, Lambert Van Poolen, *chairman*

Geology, Geography, and Environmental Studies, Clarence Menninga, *chairman*

Mathematics and Computer Science, Thomas Jager, *chairman*

Nursing, Cynthia Kielinen, *chairman*

Physics, John Van Zytveld, *chairman*

Division of Contextual Disciplines, Roger Griffioen, *chairman*

Education, Leroy Stegink, *chairman*

History, Robert Bolt, *chairman*

Philosophy, Clifton Orlebeke, *chairman*
Religion and Theology, John Primus, *chairman*

Faculty

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

EMERITI

- Josephine Baker, M.A., M.A.L.S.
Librarian, Emerita
- Henry Bengelink, M.S.
Assistant Professor of Biology, Emeritus
- Melvin E. Berghuis, M.A., Ph.D.
Professor of Speech, Emeritus
- Nicholas Henry Beversluis, Th.B., Th.M., M.A., Ed.D.
Professor of Education, Emeritus
- Kathryn Blok, M.A., Ed.S., Ph.D.
Professor of Education, Emerita
- Clarence Boersma, M.A., M.A., Ph.D.
Professor of Germanic Languages, Emeritus
- Bert Peter Bos, M.A., Ed.D.
Director of Teacher Certification, Emeritus
- John Harold Bratt, Th.B., Th.M., S.T.M., Th.D.
Professor of Religion and Theology, Emeritus
- Herman H. Broene, Ph.D.
Professor of Chemistry, Emeritus
- John Thomas Daling, M.A., Ph.D.
Professor of Psychology, Emeritus
- John Lester De Beer, M.A., Ed.D.
Professor of Education, Emeritus
- James John De Jonge, M.S., M.Mus.
Associate Professor of Music, Emeritus
- Theodford P. Dirkse, M.A., Ph.D.
Professor of Chemistry, Emeritus
- Bernard Jay Fridsma, Sr., M.A., Ph.D.
Professor of Germanic Languages, Emeritus
- Harold Paul Geerdes, M.Ed.
Associate Professor of Music, Emeritus
- William Cornelius Hendricks, M.Ed.
Associate Professor of Education, Emeritus
- James P. Hoekenga, M.A.
Executive Director of Alumni Relations, Emeritus
- Winifred H. Holkeboer, M.A.
Associate Professor of English, Emerita
- Henry Peter Ippel, M.A., Ph.D.
Professor of History, Emeritus

- Martin Karsten, M.S.
Associate Professor of Biology, Emeritus
- Walter Lagerwey, M.A., Ph.D.
Professor of Germanic Languages, Emeritus
- Charles J. Miller, Ph.D.
Professor of History, Emeritus
Dean for Academic Administration, Emeritus
- Bernard Edward Pekelder, Th.B., M.A.
Vice-president for Student Affairs, Emeritus
Chaplain, Emeritus
- Cornelius A. Plantinga, M.A., M.Ed., Ph.D.
Professor of Psychology, Emeritus
- William Thomas Radius, M.A., Ph.D.
Professor of Classical Languages, Emeritus
- H. Evan Runner, Th.B., Th.M., D.Phil.
Professor of Philosophy, Emeritus
- William Spoelhof, M.A., Ph.D., LL.D., Litt.D., D.H.L.
President, Emeritus
- Barney Steen, Ed.D.
Professor of Physical Education, Emeritus
- Henrietta Ten Harmsel, M.A., Ph.D.
Professor of English, Emerita
- Richard Robert Tiemersma, M.A., Ph.D.
Professor of English, Emeritus
- John Johnson Timmerman, M.A., Ph.D.
Professor of English, Emeritus
- John Vanden Berg, M.A., Ph.D.
Vice President for Academic Administration, Emeritus
- Gertrude Vander Ark, M.A., Ed.S.
Assistant Professor of Education, Emerita
- Helen Van Laar, M.A.
Assistant Professor of Education, Emerita
- Clarence John Vos, Th.B., Th.M., D.Th.
Professor of Religion and Theology, Emeritus
- Dorothy Westra, M.A., Ph.D.
Professor of Education, Emerita
- John Gerard Westra, M.A., Ph.D.
Professor of Political Science, Emeritus
- Enno Wolthuis, M.S., Ph.D.
Professor of Chemistry, Emeritus
- G. Roderick Youngs, Th.B., M.A., Ed.D.
Professor of Psychology, Emeritus
- Sydney T. Youngsma
Assistant to the President, Emeritus
- Mildred Reitsema Zylstra, M.A.L.S.
Assistant Professor of English, Emerita
- Henry Aay, Ph.D. (Clark, 1978)
Professor of Geography and Environmental Studies
- Gerry M. Adams, M.A. (Stanford, 1983)
Instructor in Mathematics and Computer Science
- Robert J. Albers, Ph.D. (Connecticut, 1962)
Professor of Chemistry

ACTIVE

- Samuel J. Anema, M.S.** (Western Michigan, 1970)
Director of Computing Services
- Martinus A. Bakker, M.A.** (University of South Africa, 1967), Drs. (Utrecht State University, 1977)
Associate Professor of Germanic Languages
- Claude-Marie Baldwin, M.A., Ph.D.** (Michigan State, 1977, 1984)
Professor of French
Chairman of the Department of French
- Henry James Baron, M.A.** (Michigan, 1966), Adv. Cer., Ph.D. (Illinois, 1968, 1972)
Professor of English
- Lionel L. Basney, M.A., Ph.D.** (Rochester, 1968, 1971)
Visiting Professor of English
- John D. Beebe, M.A.** (South Dakota, 1966), Ph.D. (Chicago, 1970)
Professor of Biology
- Marilyn R. Bierling, M.A.** (Michigan, 1974)
Instructor in Spanish
- Ronald Lee Blankespoor, Ph.D.** (Iowa State, 1971)
Professor of Chemistry
- Marcia J. Boelema, M.A.** (Michigan State, 1985)
Assistant Professor of Spanish
- Donald L. Boender, M.A.** (Michigan, 1965)
Dean of Men
Acting Executive, Student Affairs Division
- Warren J. Boer, B.D.** (Calvin Theological Seminary, 1963), M.A. (Princeton Theological Seminary 1969), D.Min. Fuller Theological Seminary, 1974)
Director, Broene Counseling Center
- Edgar Gene Boevé, J.** Franklin School of Professional Arts, M.S.D. (Michigan 1954)
Professor of Art
- Ervina Boevé, M.A.** (Michigan, 1954)
Professor of Communication Arts and Sciences
- Martin Bolt, M.A., Ph.D.** (Michigan State, 1967, 1969)
Professor of Psychology
- Robert Bolt, M.A., Ph.D.** (Michigan, 1953), Ph.D. (Michigan, State, 1963)
Professor of History
Chairman of the Department of History
- Helen Bonzelaar, M.A., Ph.D.** (Western Michigan, 1964, 1984)
Professor of Art
Chairman of the Department of Art
- Paul H. Boonstra, M.A.** (Michigan, 1958), M.S. (Purdue, 1963), Ph.D. (Michigan State, 1970)
Professor of Mathematics
- **Bette DeBruyn Bosma, M.A., Ph.D.** (Michigan State, 1972, 1981)
Professor of Education
- James Peter Bosscher, M.A.** (Purdue, 1957), Ph.D. (Michigan 1968)
Professor of Engineering
- Hessel Bouma III, Ph.D.** (Texas, 1975)
Professor of Biology
Fellow, Calvin Center for Christian Studies
- Al Dirk Bratt, M.S.** (Michigan State, 1957), Ph.D. (Cornell, 1964)
Professor of Biology
- Kenneth Dale Bratt, M.A., Ph.D.** (Princeton, 1973, 1985)
Professor of Classical Languages
- Wallace Henry Bratt, M.A., Ph.D.** (Michigan 1956, 1966)
Professor of Germanic Languages

- Daryl Myron Brink, M.A. (Western Michigan, 1968), Ph.D. (Michigan State, 1972)
Professor of Mathematics and Computer Science
- John Harvey Brink, M.S., Ph.D. (Purdue, 1972, 1974)
Professor of Psychology
- Herbert John Brinks, M.A., Ph.D. (Michigan, 1961, 1965)
Professor of History
Curator, Colonial Origins Collection
- Jack E. Brothers M.B.A. (North Carolina 1962)
Assistant Professor of Economics and Business
- Conrad John Bult, M.A., M.A.L.S. (Michigan, 1962, 1965)
Assistant Library Director for College-Related Matters
- Linda Burden, B.S. (Western Michigan University, 1977), M.S.N. (Wayne State University, 1979)
Adjunct Instructor in Nursing
- Ynés M. Byam, M.A. (Michigan State University, 1977)
Associate Professor of Spanish
- Randall L. Bytwerk, M.A., Ph.D. (Northwestern, 1973, 1975)
Associate Professor of Communication Arts and Sciences
- Barbara Carvill, Ph.D., (Toronto, 1981)
Professor of Germanic Languages
Chairman of the Department of Germanic languages
- James A. Clark, M.A., Ph.D. (Colorado, 1974, 1977)
Associate Professor of Geology
- Sandra Kay Clevenger, M.A. (Michigan State, 1974)
Associate Professor of Spanish
- David A. Cook, M.S.Acc. (Western Michigan, 1979)
Assistant Professor of Economics and Business
- Dale Jay Cooper, B.D., (Calvin Theological Seminary, 1968)
College Chaplain
- Elsa Cortina, Doctora en Pedagogia (Universidad Habana, 1951), M.A. (Michigan State University, 1977)
Associate Professor of Spanish
Chairman of the Department of Spanish
- Chloe Ann Danford, M.S. (Colorado, 1975)
Associate Professor of Nursing
- Gordon Lee De Blaeys, M.A., Ph.D. (Western Michigan, 1967, 1970)
Professor of Sociology
- James B. De Boe, M.A. (Roosevelt, 1982), Ph.D. (South Dakota, 1985)
Assistant Professor of Psychology
- Marilyn E. De Boer, M.S.W. (Denver, 1972)
Dean of Women
- Peter Pousma De Boer, M.A., Social Studies (New Jersey State, 1952), M.A., English-American Civilization (Iowa, 1961), Ph.D. (Chicago, 1968)
Professor of Education
- **Willis Peter De Boer, Th.B. (Calvin Theological Seminary, 1951), D.Th. (Vrije Universiteit, Amsterdam, 1962)
Professor of Religion and Theology
- *James Henry De Borst, M.A., Ph.D. (Michigan, 1965, 1972)
Professor of Political Science
Chairman of the Department of Political Science
- David De Heer, Ph.D. (Arizona, 1972)
Associate Professor of Biology
- Peter Ymen De Jong, M.A., Ph.D. (Western Michigan, 1969, 1972)
Professor of Sociology

- Roger Lee De Kock, Ph.D. (Wisconsin, 1969)
Professor of Chemistry
- Leon W. De Lange, M.B.A. (Central Michigan, 1970), C.P.A.
Associate Professor of Economics and Business
- †Peter Allen De Vos, M.A., Ph.D. (Brown, 1964, 1972)
Professor of Philosophy
- **Bert De Vries, B.D. (Calvin Theological Seminary, 1964), M.A., Ph.D. (Brandeis, 1965, 1967)
Professor of History
- Robert Lee De Vries, M.A., Ph.D. (Michigan, 1964, 1974)
Professor of Political Science
- Henry De Wit, M.B.A. (Michigan, 1948), C.P.A.
Vice President for Business and Finance
- **Derald Dwight De Young, M.M. (Eastman, 1965), Ph.D. (Minnesota, 1975)
Visiting Professor of Music
- Anthony J. Diekema, M.A., Ph.D. (Michigan State University, 1958, 1965)
President
- Douglas S. Diekema, M.D. (North Carolina, 1985)
Fellow, Calvin Center for Christian Studies
- David James Diephouse, M.A., Ph.D. (Princeton, 1971, 1974)
Professor of History
- Evelyn J. Diephouse, M.Ed. (Rutgers, 1976)
Director of Academic Support Program
Director of Academic Advising
- John W. Dodge, M.A., Ph.D. (Wisconsin, 1974, 1981)
Associate Professor of Economics and Business
- Mary M. Doornbos, M.S. (University of Michigan, 1983)
Instructor in Nursing
- Edward R. Douma, M.A. (Western Michigan, 1973)
Assistant Professor of Physical Education
- Esther F. Driesenga, M.S. (Michigan State, 1979)
Assistant Professor of Physical Education
- Eugene Roy Dykema, M.B.A. (Chicago, 1968), Ph.D. (Notre Dame, 1983)
Professor of Economics and Business
- Johanna Duyst, M.A.L.S. (Michigan, 1973)
Librarian
- Edward E. Ericson, Jr., M.A., Ph.D. (Arkansas, 1963, 1967)
Professor of English
Chairman of the Department of English
- Terry L. Eves, M.A.R. (Westminster Seminary, 1980)
Visiting Assistant Professor of Religion and Theology
- Alan Irwin Gebben, M.A.T. (George Peabody and Vanderbilt, 1955), M.S., Ph.D. (Michigan, 1959, 1965)
Professor of Biology
- Samuel Everett Greydanus, Jr., M.A. (Edinburgh, 1951)
Professor of History
- Roger Duane Griffioen, Ph.D. (Purdue, 1960)
Professor of Physics
Dean for the Natural Sciences and Mathematics and for the Contextual Disciplines
- Stanley L. Haan, Ph.D. (Colorado, 1983)
Associate Professor of Physics

- John Edward Hamersma, S.M.M., S.M.D. (Union Theological Seminary, New York, 1952, 1961)
Professor of Music
College Organist
- Lee P. Hardy, M.A. (Duquesne, 1979), M.A. (Pittsburgh, 1980)
Assistant Professor in Philosophy
- George Graham Harper, Jr., M.A., Ph.D. (Northwestern, 1951, 1959)
Professor of English
- George Harris, M.A. (Michigan, 1959), Ph.D. (Northwestern, 1971)
Professor of Classical Languages
Chairman of the Department of Classical Languages
Secretary of the Faculty
- Janice B. Heerspink, M.A. (Michigan State 1981)
Academic Support Program
- Cornelius Peter Hegewald, M.A., D.A.G. (Michigan State, 1964, 1967)
Professor of Germanic Languages
- Donald R. Hettinga, M.A., Ph.D. (Chicago, 1977, 1983)
Assistant Professor of English
- Henry Jay Hoeks, B.S.A.E. (Purdue, 1958), M.C.E. (Western Theological Seminary, 1966)
 Ed.D. (Columbia, 1975)
Professor of Religion and Theology
Director of the Academic Study of Religions Program
- Robert James Hoeksema, M.S.E. (Michigan, 1978), Ph.D. (Iowa, 1984)
Assistant Professor of Engineering
- Thomas Brian Hoeksema, M.A., Ph.D. (Michigan State, 1972, 1975)
Professor of Education
Coordinator of Special Education: Mentally Impaired
- Roland G. Hoksbergen, M.A. (Notre Dame, 1981)
Instructor in Economics and Business
- James M. Hollebeek, M.A., M.A. (Western Michigan, 1974, 1976), Ed.S. (Drake, 1983)
Counselor in the Broene Center
- Kerry J. Hollingsworth, M.A. (York, 1979)
Assistant Professor of Political Science
- David Jack Holquist, M.A. (Michigan, 1967), Ed.S. (Michigan State, 1974)
Associate Professor of Communication Arts and Sciences
Chairman of the Department of Communication Arts and Sciences
- Henry Holstege, Jr., M.A., Ph.D. (Michigan State, 1958, 1966)
Professor of Sociology
- Philip Cornelius Holtrop, B.D. (Calvin Theological Seminary, 1958)
Assistant Professor of Religion and Theology
- Ralph John Honderd, M.A. (Michigan State, 1966)
Associate Professor of Physical Education
- Donald R. House, M.B.A. (University of Michigan, 1952)
Assistant Professor of Economics and Business
- Carl John Huisman, M.F.A. (Michigan State, 1967)
Associate Professor of Art
- Gertrude Ann Huizenga, M.A. (Ohio State, 1963), M.Mus., Ph.D. (Michigan State, 1969, 1980)
Associate Professor of Music
- Thomas Leigh Jager, M.S., Ph.D. (Chicago, 1967, 1971)
Professor of Mathematics
Chairman of the Department of Mathematics
- **Robert Andrew Jensen, M.F.A. (Ohio, 1952)
Professor of Art

- Annamarie L. Joosse, M.A., Ed.S.** (Michigan State, 1971, 1972)
Counselor in the Broene Center
- *Wayne George Joosse, M.A., Ph.D.** (Michigan State, 1965, 1975)
Professor of Psychology
- Carl William Kaiser, M. Mus.** (Catholic University, 1961)
Associate Professor of Music
- Corrine E. Kass, M.A.** (Michigan, 1955), Ph.D. (Illinois, 1962)
Professor of Education
Coordinator of Special Education: Learning Disabilities
Dean for Academic Administration
- Cynthia E. Kielinen, M.S.** (Boston University School of Nursing, 1972), Ed.D. (Columbia University, 1979)
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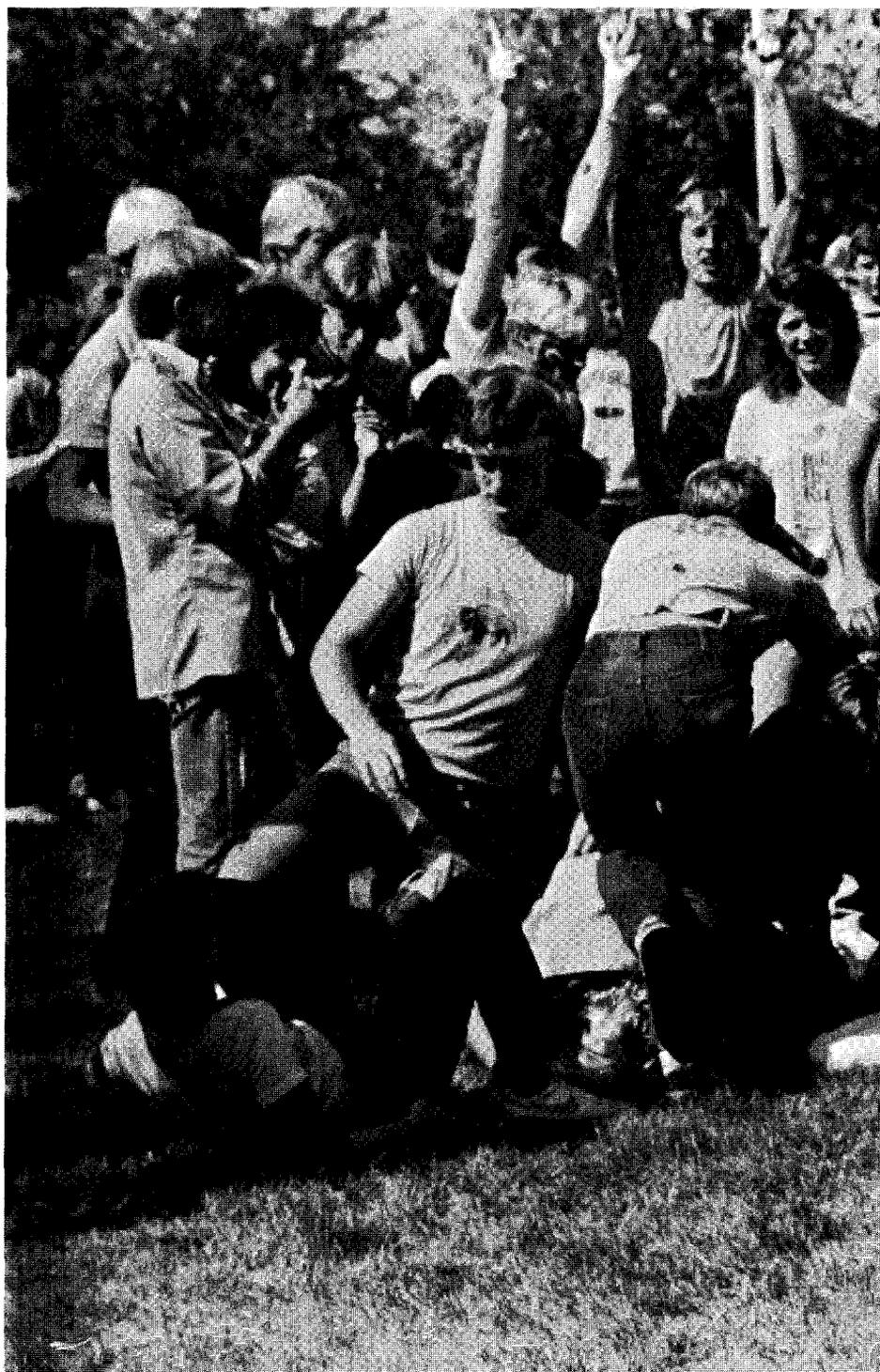
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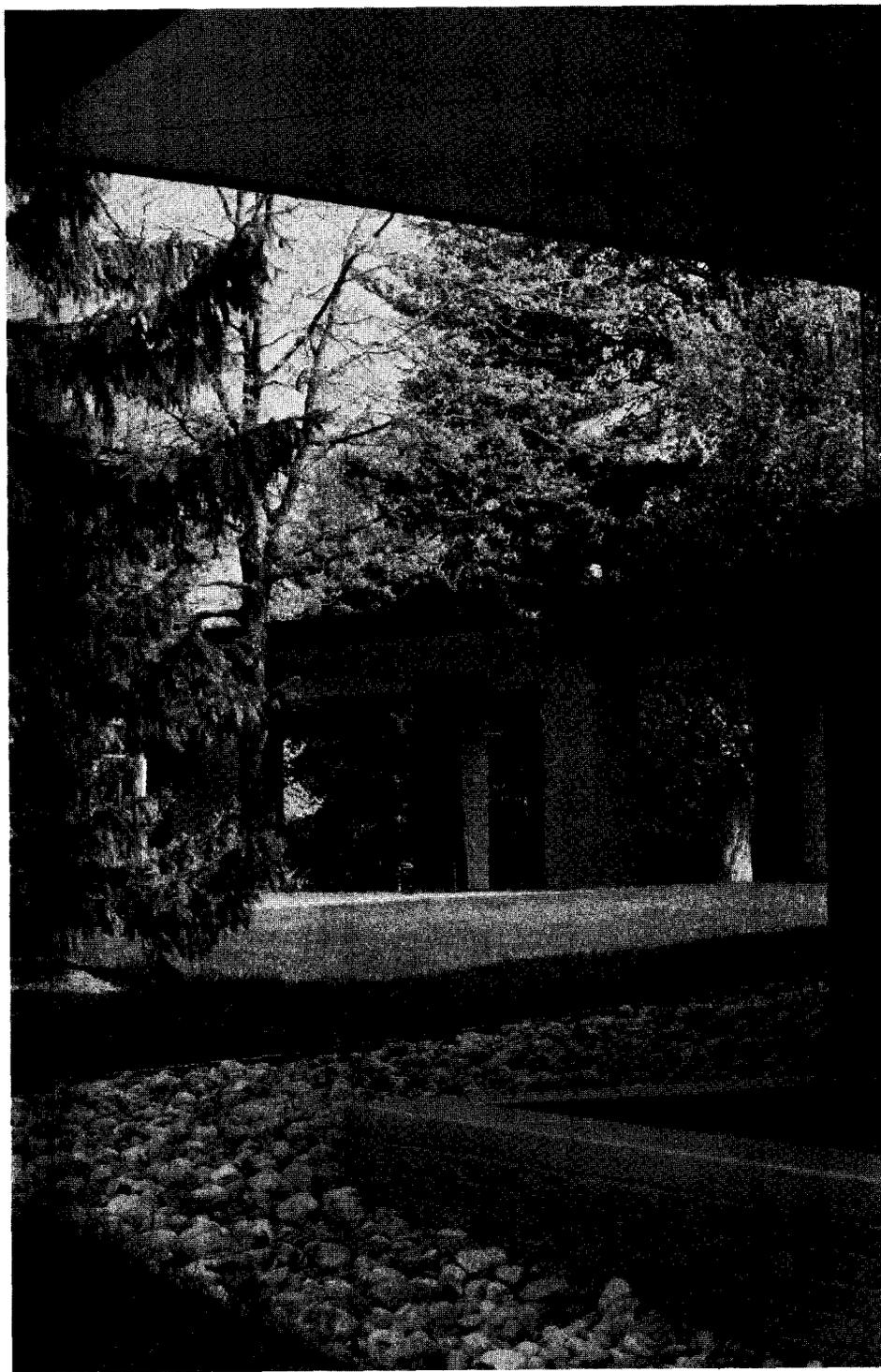


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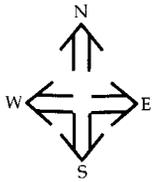
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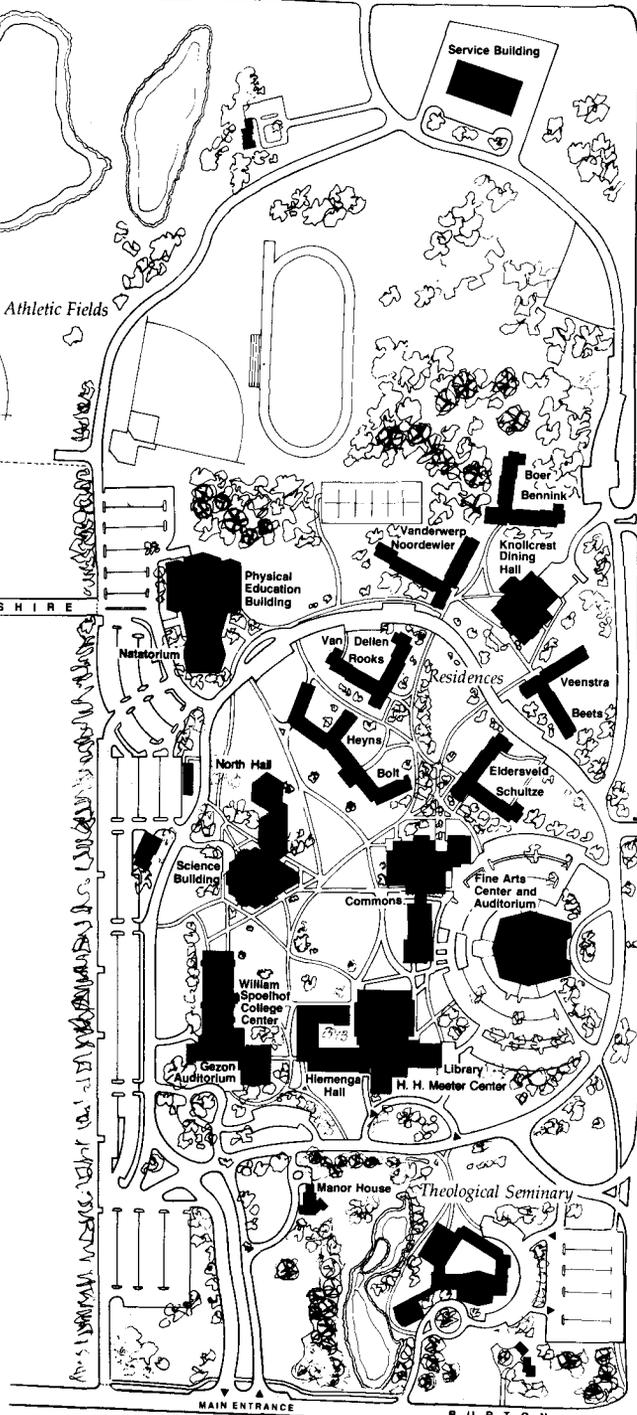




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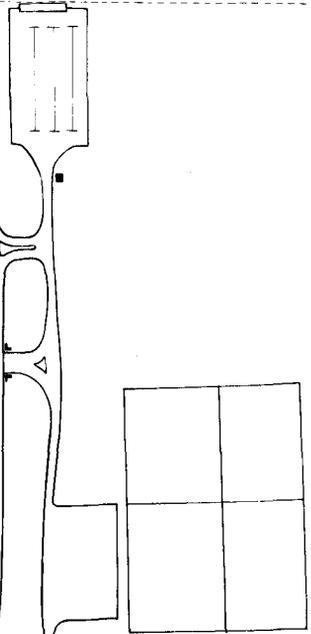
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