

ADDRESSES

Calvin College is located on the East Beltline (M37) between Lake Drive and Burton Street. Mail for all offices should be addressed: Calvin College, Grand Rapids, Michigan 49546. When possible, the specific office or purpose should be indicated on the envelope—Admissions, Scholarships, Housing, etc. Mail for students should be addressed: Student's name, student's residence hall, Calvin College, Grand Rapids, Michigan 49546. The address of the Calvin Theological Seminary is 3233 Burton Street, S.E., Grand Rapids, Michigan 49546.

Although each office and student room has its own phone number, any office or room can be reached through the general college and seminary phone number: (616) 957-6000.

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Important Deadlines for Students

- Final day to add classes
- Final day to file requests to take exemption or credit exams
- Final day to change from credit to audit or audit to credit
- Final day to drop course
- Final day to remove incompletes from the previous semester

Fall Semester

- September 17
- October 1
- October 5
- December 1
- December 1

Spring Semester

- February 11
- February 15
- March 1
- May 1
- May 1

CALENDAR

The Fall Semester 1990

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

The Interim 1991

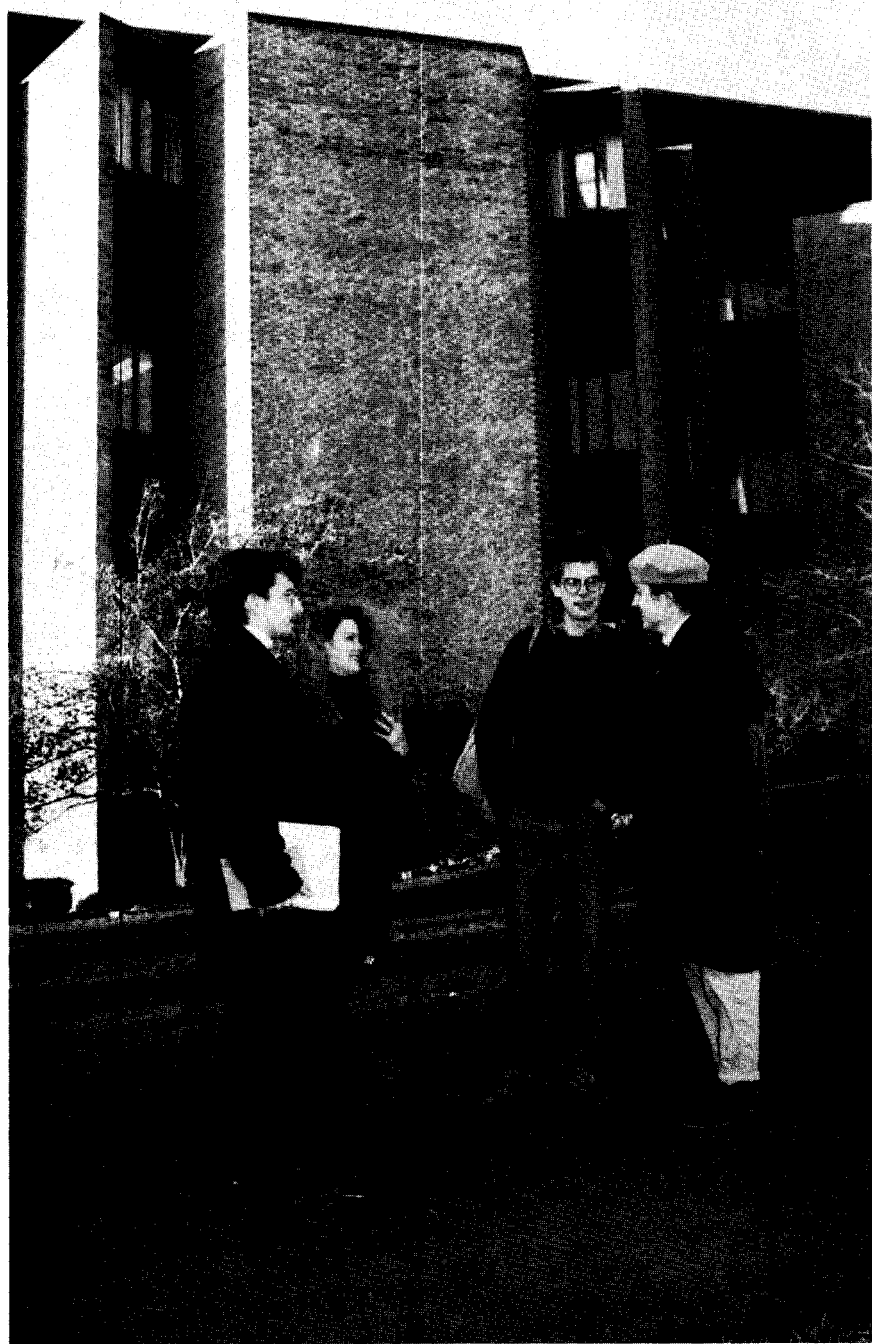
JANUARY	9	Wednesday	Interim term begins 8:00 a.m.
	31	Thursday	Interim term ends 5:00 p.m.

The Spring Semester 1991

FEBRUARY	4	Monday	Spring semester classes begin 8:00 a.m.
MARCH	29	Friday	Spring vacation begins 12:50 p.m. Good Friday services start at 1:00 p.m.
APRIL	9	Tuesday	Spring vacation ends 8:00 a.m.
	23-24	Tuesday-Wednesday	Reading recess/advising days
	26	Friday	Registration for fall semester begins
MAY	2	Thursday	Honors Convocation
	3	Friday	Registration ends
	15	Wednesday	Classes end 10:00 p.m.
	16	Thursday	Reading recess
	17	Friday	Examinations begin 9:00 a.m.
	22	Wednesday	Examinations end 6:00 p.m.
	25	Saturday	Commencement 3:00 p.m.

The Summer Sessions 1991

MAY	28	Tuesday	Summer Session I begins 8:30 a.m.
JUNE	19	Wednesday	Summer Session I ends
	24	Monday	Summer Session II begins 8:30 a.m.
JULY	4	Thursday	Independence Day—no classes
	17	Wednesday	Summer Session II ends
	18	Thursday	Summer Session III begins 8:30 a.m.
AUGUST	9	Friday	Summer Session III ends



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 Brès, in 1561; and the Canons of Dort.

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 now is 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. Since then, the William Spoelhof College Center, the Bergsma Natatorium, the Knollcrest East apartment complex, Johanna Timmer and Kalsbeek-Huizenga residence halls, and additions to the Commons and the Science Building have been completed, thereby providing for the potential of 4,500 students, with over half living on campus. The chapel was completed in 1989.

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 their relationship to God, to themselves, to fellow human beings, 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 others 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.

Christian Community

Calvin College is a Christian academic community of faculty, students, and staff who come together for the purpose of pursuing liberal arts education in the Reformed Christian tradition. Members of the community experience the common bond of lives committed to Jesus Christ, of relationships guided by biblical principles of love, justice, and righteousness, and of gifts used for God's glory and the furtherance of His kingdom.

A commitment of the community is to seek, nurture, and celebrate cultural and ethnic diversity, in obedience to the biblical vision of the kingdom of God formed "from every tribe and language and people and nation." Its members are part of the family of Christ that transcends ethnic, cultural, racial, and class

boundaries; a communion of saints in which each member earnestly desires to use his or her gifts for the service and support of the other members.

The Calvin community has come together from wide-ranging backgrounds and places. Personal and spiritual maturity is uneven; expectations and goals, diverse. Obviously unanimous agreement by every member on the community's shared commitments is quite impossible. While no one is forced to acknowledge the community's Lord nor to obey Him unwillingly, each one who has chosen to join the Calvin community thereby declares he or she is willing not to violate the community's values and commitments. While each member is chiefly accountable to God for his or her own life's pattern, all members also bear responsibility to and for one another in this community. Neither the pattern of one's own life nor his or her lack of encouragement and support of another's may cause a brother or sister to stumble. God's infallible Scripture provides a trustworthy guide to define faith and to regulate life together. In addition to the explicit teachings of Scripture which in obedience members strive to uphold, the college community also chooses to maintain certain standards of behavior for prudence's sake and the better ordering of life together.

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 trustee selected 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, age, 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. The Director of the Academic Support Program provides advice and support to students with disabilities. Inquiries and appeals regarding compliance with these federal requirements should be directed to Mr. William Boer, Vice President for Administration and Finance, Calvin College Financial Services 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. The Accreditation Board for Engineering and Technology, the American Chemical Society, the National Association of Schools of Music, and the National Council for Accreditation of Teacher Education have accredited the programs of the college which they review. The Hope-Calvin Nursing Program is accredited by the National League for Nursing and the Michigan Board of Nursing. The college 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 American Association of Colleges for Teacher Education, the College Entrance Examination Board, the 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. 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.

The summer school consists of three 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 to 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 graduated from Calvin Seminary are also considered members of the association. There are currently more than forty 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 twenty persons, most of whom are alumni serving three-year terms. The board meets three times during the year. Board meetings are open to all alumni, and an international 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 educational and social 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 Relations 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 students how a life of commitment can be lived in their rooms, on the athletic field, in their academic work, and in 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 churches. 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. In addition to the main services held in the chapel, a variety of other services such as informal student-led chapels, foreign language chapels, and group devotions are held at other places at this time. Students are expected to attend some chapel services during the week. In addition there are many opportunities for voluntary religious activities. Bible study groups, student prayer groups, Christian service activities, and evangelistic outreach are a few of these voluntary programs. This part of campus religious life is supervised by the Student Affairs Division, various committees, and the college chaplain.

The 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 visual arts. It sponsors workshops, visiting artists, and speakers. Regular educational exhibitions in the Center Art Gallery and a visible permanent art collection provide visual stimulation, aesthetic quality, and an enhancement of the total Calvin environment through the celebration of rich cultural heritage and support of the art activities of students, faculty, alumni, and other Christians. The student-organized Fine Arts Guild and its subguilds in Dance, Visual Arts, Music, and Writing provide independent expression and dialogue regarding the arts among all the students.

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 also 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, tennis, and soccer. 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.

Student Senate and Other Organizations

The twenty-one-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, some of which are related to particular academic departments. All organized clubs and similar groups must have a faculty mentor and must have formal approval through the student life committee.

The Student Volunteer Service (SVS) is a student service group which encourages Christian social responsibility through volunteer activities. 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.

Student Conduct

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 students to conduct themselves 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 prohibited conduct. Among those prohibited actions are all kinds of dishonesty, acts of violence, disruption of institutional

activities, theft, unauthorized entry, sexual misconduct, use of alcoholic beverages on campus and at extended campus events, drunkenness, profane and obscene language and use of illegal drugs. 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 have a student or faculty member advise them at the hearings, and provide for appeal to higher judicial bodies.

Housing Regulations

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 is available from the college Housing Office.

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.

Health Services

The college provides limited outpatient medical care for all students. Charges for services provided are kept as inexpensive as possible. The Health Center, located in the basement of Heyns Hall, is staffed by registered nurses and a team of physicians with consultation hours on weekdays. Serious health problems are referred to the student's family physician or to the local physician of choice after discussion with Health Center personnel.

In addition to caring for health problems the Health Center staff encourages health teaching and preventive medicine. For the protection of everyone in the Calvin community, current physician-documented immunization status for polio, diphtheria, pertussis, tetanus, measles, mumps, rubella, and tuberculin skin testing is mandatory for students entering Calvin. Students who lack such documentation are not permitted to register for succeeding semesters until this requirement is met.

A Group Accident and Sickness Expense Protection Plan is available to all students on a low-cost, voluntary basis. This plan primarily covers conditions for which hospitalization is required and provides little in the way of outpatient

benefits. All students are strongly urged to be certain they have adequate broad-range coverage. 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.

Orientation and Advising

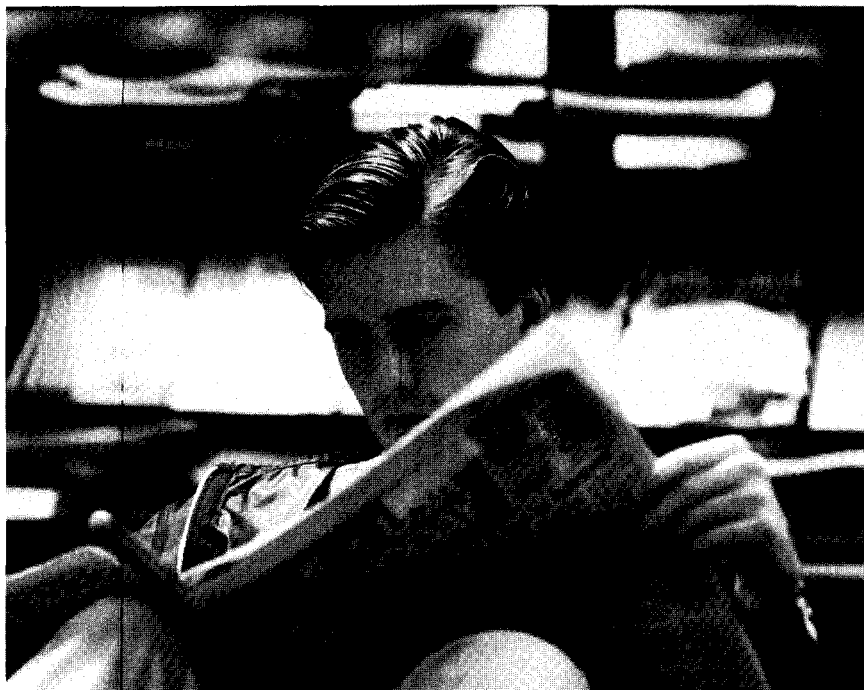
All new students are required to participate in a program of orientation held just prior to registration. Guided by upperclass students serving as orientation leaders, they will meet key faculty members and administrators, receive information about college activities and facilities, and obtain registration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

All freshman students are assigned individual advisors from the faculty. These faculty members keep office hours during which they are available to assist students in making decisions about courses and programs.

Students are expected to assume responsibility for obtaining academic advising. They must keep themselves informed about curriculum requirements, both in the core curriculum and in their programs of interest; they are expected to initiate conferences with their advisors and to come prepared with up-to-date information about the courses they have completed; and they must be aware of academic deadlines and regulations.

After their freshman 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, each student must work out with a faculty advisor the appropriate counseling forms defining a program which will lead to graduation. This usually requires declaring a major in a given department or group of departments. The faculty member who signs the counseling form becomes the advisor of record. The Registrar and Associate Registrar are available to students for help with advising problems.

Additional general and specialized advising 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 Academic Support Program instructors provide specialized assistance designed to improve academic work.



Library

The Calvin Library, at the center of the campus, serves students of both the college and the seminary. Its 525,000-volume collection of books, bound periodicals, and government documents is distributed over four floors of open stacks which are arranged according to the Library of Congress classification. More than 2,750 current periodicals are available for use in the library. Three major microfiche collections, The Library of American Civilization, The Library of English Literature, and ERIC are part of the 400,000-item collection of microfilm, microfiche, and microcards. The library, which is air conditioned, can seat 1,200 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 fourth 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 second 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 centrally located in the William Spoelhof College Center. It provides computing services to the faculty by supporting instruction and research, to administrative offices of the college, to agencies of the Christian Reformed Church, and to students by providing and maintaining both timesharing system terminals and microcomputers for their use.

Calvin offers access to a network of Prime minicomputers and to a variety of Sun Microsystems equipment including a Sun 4/390 server system. Also available for student use are Zenith 159, IBM PS/2 and MacIntosh SE microcomputer systems.

This equipment is made available in computer rooms in the Fine Arts Center, the Library, and in North Hall as well as the computer rooms in many of the dormitory complexes.

Software available to students consists of WordMARC Word Processing, SPSS, SPSSx, S2020, Mini-Tab, Lotus 1-2-3, dBasIII, MacWrite, MacPaint, Hypercard, and a great deal of educational software. Languages currently available at Calvin include Pascal, FORTRAN 77, BASIC V, COBOL, LISP / PROLOG, C, and Macro Assembler.

The Computer Center offers free non-curricular computer classes to faculty, staff, and the student body, with instruction in word processing, spreadsheet, data analysis, and editor. The Computer Center staff is committed to serving the Calvin College community by meeting its growing needs with the latest in software and hardware.

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.

Broene Center for Counseling, Career Development and Placement

The Broene Center offers services in the areas of personal counseling, life enrichment, career development and placement.

Counseling. The staff provides individual and group counseling in a wide variety of areas. They offer 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.

Career Development. The staff also 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 to and appropriate for them. The career resource area contains a wide selection of career information including two computerized career informational systems.

Placement. In addition, the Broene Center offers a number of services for graduating students to assist them in securing career placement. All seniors and alumni are eligible for this service and are encouraged to register and establish a file. A nominal fee is charged for extending placement services to seniors and alumni. Job opportunities are posted, and information of interest to those seeking employment, such as employers scheduled to conduct interviews on campus, is publicized. Personal counsel is given in job-search techniques such as resume writing and interviewing skills. The Broene Center maintains a Placement Resource Center which makes available information on employers and employment in various parts of the United States, Canada, and foreign countries, as well as with federal and state governments. Seniors who will be seeking placement assistance from the Broene Center are asked to register for services early in their final year at Calvin.

Hours. Counselors are available by appointment or during "walk-in" times, which are posted daily time slots when a counselor is available to meet with students without an appointment. Center hours are 8:00 A.M. to 5:00 P.M. weekdays except for Wednesday, when the Center is open until 9:00 P.M. Placement services are available year-round.



ADMISSION AND STANDARDS

Regulations concerning admission

Procedures for Admission

In selecting students for admission, Calvin College looks for evidence of Christian commitment and for the capacity and desire to learn. Students who are interested in the Christian perspective and curriculum of Calvin and who show an interest in its aims are eligible for consideration. Although the prospect of academic success is of primary consideration, the aspirations of the applicant, the recommendation of a high school counselor, teacher, or youth pastor, and the ability of Calvin to be of service will also be considered in admission decisions. 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 admission. 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 attended*
3. *Entrance examination results, preferably ACT*
4. *The recommendation of a high school counselor, teacher, or youth pastor*

All applications must be accompanied by a \$20 application fee. After students are formally admitted, they must confirm their acceptance by the payment of a deposit, which is applied to their tuition.

For freshman students, the deposit of \$200 is required by May 1. Refunds may be requested before June 1. For transfer students, the deposit is required by June 1, with a refund available until July 1.

Former students of the college, including students who have been dismissed and applicants who previously had been granted admission but who did not register, must apply for readmission. An admission deposit of \$200 must be received from readmitted students by August 15.

Entrance Test Information

Because student applications are not considered until entrance examination (preferably ACT) results have been received, prospective freshman students are advised to take the entrance examination during the spring semester of their junior year or in the fall of their senior year. 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 per year. 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 1989-90 academic year are October 27, 1990; December 8, 1990; February 9, 1991; April 13, 1991; and June 8, 1991.

Applicants not able to take the ACT may submit Scholastic Aptitude Test results. Subsequently they will be required to take the ACT on campus. The Scholastic Aptitude Test will be given this academic year on October 13, 1990; November 3, 1990; December 1, 1990; January 26, 1991; March 16, 1991; May 4, 1991; and June 1, 1991. 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 area, should apply to the College Entrance Examination Board, Box 1025, Berkeley, California 94701.

Admission Standards

Applicants must be graduates from an accredited high school. The following components must be included in the applicant's college preparatory work: a minimum of three years of courses in English, one year-long course in algebra, and one year-long course in geometry. In addition, a minimum of two years of college preparatory courses must be taken in any two of the following fields: social sciences, languages, and the natural sciences. One of the fields from mathematics, language, social sciences, and the natural sciences must include at least three years of study. The model high school program given below indicates the recommended coursework to be taken in high school.

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. In the recommended program below, a unit is a year-long course.

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. Three units are desirable for students considering programs in the sciences or health fields.
History/Social Sciences	3 units	
Electives	3 units	Typing and college preparatory courses.

Applicants with a high school average of C +/B- (2.5) or higher in their college preparatory courses are normally given regular admission if their college entrance test scores meet the guidelines in the table below.

Minimum Test Scores Need for Regular Admission

ACT English	ACT Math	ACT Reading	ACT Comp.	SAT Verbal	SAT Math
19	20	16	20	390	420

Note: The above standards are based on ACT scores produced after October of 1989; standards for scores produced earlier are available from the Office of Admissions.

Applicants with lower grades and scores or with fewer college preparatory courses in their high school program are reviewed individually by the Committee of Admissions. Some of these applicants will receive admission with certain conditions attached.

Profile of the Calvin Student Body

Statistical profiles of the Calvin College student body include the following information about the 1989 entering freshman class: the average high school GPA was 3.19; the ACT composite score was 23.0; the ACT English score was 22.0; the ACT mathematics score was 22.1, the ACT social sciences score was 21.9, and the ACT natural sciences score was 25.6. The SAT averages for those students who submitted scores were 495 verbal and 549 mathematics. The comparable scores for the enhanced ACT test are a composite score of 24, an English score of 25, and a Mathematics score of 22.

Policies for College Credits or Exemptions

Some students are able to earn advanced college credit in certain subjects. This may be secured in any of four ways:

1. A grade of 3 or higher on an Advanced Placement (AP) Examination conducted by the College Entrance Examination Board. For more detailed information, please request the pamphlet on Advanced Placement Policies from the Office of Admissions.
2. A satisfactory score on any of the Subject Examinations of the College-Level Examination Program (CLEP) of the College Entrance Examination Board.
3. The passing of special departmental examinations at Calvin College, as described on page 24.
4. A mark of 75 or higher in an Ontario Academic Course approved by the Calvin faculty. Please request a pamphlet from the Admissions Office for more information.

Furthermore, students who have completed appropriate courses in high school may be exempted from certain college graduation requirements. This is

possible in foreign language, mathematics, literature, and the sciences. Consult pages 52–55 for a description of the ways high school courses satisfy college requirements.

Nondiscriminatory Policy

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. In the administration of its educational policies, admissions policies, scholarship and loan programs, or athletic or other college-administered programs, the college does not discriminate on the basis of race, color, sex, national and ethnic origin, or disability.

Transfer Students

Students transferring from other colleges or universities must follow the same application procedures as freshman students. Transcripts from all previous colleges attended must be received prior to consideration for admission. A high school transcript and ACT or SAT test results are also required. The minimum cumulative grade point average for students transferring from a 4-year institution is 2.0 and from a 2-year college, 2.5. Applicants with averages below the standard will be reviewed by the Committee on Admissions and, if admitted, may have certain conditions stipulated.

Credit will normally be awarded for work done in accredited institutions. The courses must be academic and similar in nature to courses offered at Calvin College. A minimum grade of C– is required in each course to receive credit. No more than seventy semester hours of advanced credit will be allowed for work completed at an accredited community college. Furthermore, no matter how much work done at other institutions may be accepted, all students must complete their last year in residence and at least one upper-level course in their major to graduate from Calvin.

Transfer applicants who have been admitted must make a tuition deposit of \$200 by June 1. Refunds may be 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 normally accepted, provided they have been approved by the registrar in advance. In no case, however, will work in a community 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.

Admission Under Special Conditions

The college is willing to serve students who show promise of benefiting from a college education even if they do not meet normal admission standards. Students who have not followed a college preparatory program, particularly one

including algebra and geometry, must make up such requirements before enrollment. Other applicants with marginal high school records or with low SAT/ACT test scores may be admitted on condition if there is other evidence of academic promise. Such students are required to participate in the Academic Support Program and to take assigned placement tests, will receive special counsel, may register for no more than 4.25 course units including any Academic Support Program courses, and are advised to limit their involvement in extra-curricular activities. Approximately 10 percent of the freshman class is admitted conditionally. Conditions attached to admission must be completed during the first year in residence.

Applicants who are at least nineteen years of age but have not completed high school or its equivalent may be granted conditional admission, provided they have successfully completed the General Educational Development Test (GED) and submit satisfactory scores on one of the entrance examinations.

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.

Admission of International Students

Calvin College welcomes international students who can demonstrate their 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 or SAT is not required of students presenting a Senior Matriculation Certificate (or a similar type of Certificate) or transferring from another college or university where they have earned at least one year of credit. 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 applicants are accepted for admission, they will be sent a formal letter of admission by the Director of Admissions. The next step for the applicant is to show sufficient evidence of financial support for college costs. If this support level is demonstrated, a tuition deposit ranging from 25–60% of the first year costs is required. Upon receipt of the specified deposit, the Certificate of Eligibility (I-20) will be forwarded to the prospective student, who should then make application for a student visa immediately with the nearest United States Consul.

Applicants for whom English is a second language must have an adequate command of English as demonstrated by their performance 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.)

The minimum TOEFL score for regular admission is 550; in certain situations, a student with a lower score may be admitted with a provision for off-site, intensive language training. Upon enrollment, international students must take English courses each semester until they have successfully completed English 100, a course required of all students for graduation. However, the college may require a locally-administered placement test and a subsequent review

course in English as a Second Language prior to English 100 if the need is indicated by placement testing results. International students for whom English is a second language can satisfy the graduation requirement of foreign language study with their native language.

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 advisors, carry up to two courses in Calvin Seminary in any one semester. Approval by the registrar of the seminary and the registrar of the college is required, and under no circumstances may credit for a single course be counted toward degree programs in both college and seminary. Full-time seminary students may enroll for not more than two courses in the college, provided the registrar 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 per 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 review courses are counted as part of a normal load, and students on probation or condition may be required to limit their load to three and one-quarter 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 advisor or department chair 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.

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. Classification for the purpose of college records and registration will be revised at the beginning of each academic year.

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.

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 as transfer credit or in cooperative programs at other colleges and universities are recorded on students' records but are not included in the compilation of their 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. A student will not receive course credit for repeated courses.

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.

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, freshman students may submit scores from an Advanced Placement (AP) Examination conducted by the College Board. While the minimum acceptable score is 3, the amount of credit awarded for higher scores varies. Detailed information is available from the Office of Admissions.

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. The minimum score for credit is that which corresponds to the final course grade of C on the tables published by the College Board.

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. However, such tests must be taken in lieu of registration for the course and may not be used as repeated courses. The student's performance on the examinations 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 obtain forms from the Registrar's Office and submit them to the departments by October 1 if they wish to take the examinations during the fall semester and by February 15 for the spring semester.

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. Such students are notified, offered special assistance and academic counseling, and given an opportunity to improve their records. Failing in that, however, they will be dismissed.

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. The minimum requirements for athletic eligibility are the same as those for good standing.

<i>Semesters of full-time enrollment¹</i>	<i>Minimum cumulative grade point average needed for continuation</i>	<i>Minimum cumulative grade point average needed for good standing²</i>	<i>Minimum credited course 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. A minimum of three course units is required for full-time enrollment. Interim grades are considered a part of the spring semester for the purpose of determining academic status. Summers may be used to make up deficiencies. If a student withdraws from college 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. Students receiving Veterans Administration benefits are placed on academic probation if their 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 Veterans Administration. That student will be informed in writing that the Veterans Administration has been notified.

Any student whose average falls below the minimum required for continuation is subject to dismissal. Those permitted to continue but not meeting the requirements for good standing are placed on probation. Students placed on probation must in the semester following earn a current grade point average equal to or better than the cumulative average required for good standing in that semester: e.g., a student placed on probation after the first semester must in the next semester's courses average 1.65 or above; one placed on probation after the third semester must in the fourth semester average 1.85 or above. Freshman students placed on probation may register for no more than four and one-quarter courses and may be required to complete successfully an Academic Support Program review course or to complete in good faith a program of academic counseling with an advisor. All students on probation are expected to limit extracurricular activities. Freshman or transfer students admitted with conditions must meet these conditions during their first year of enrollment. Failure to meet the terms of probation or other specified conditions will constitute grounds for immediate dismissal.

Students not permitted to continue may appeal their academic dismissal to the Committee on Probation and Retention, 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.

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. Current students may obtain a copy of their complete academic records for a fee of 25 cents.

Official transcripts are released only when requested in writing by the student. The fee is \$2. Transcripts will not be released for students who have failed to meet their financial obligations to the college.

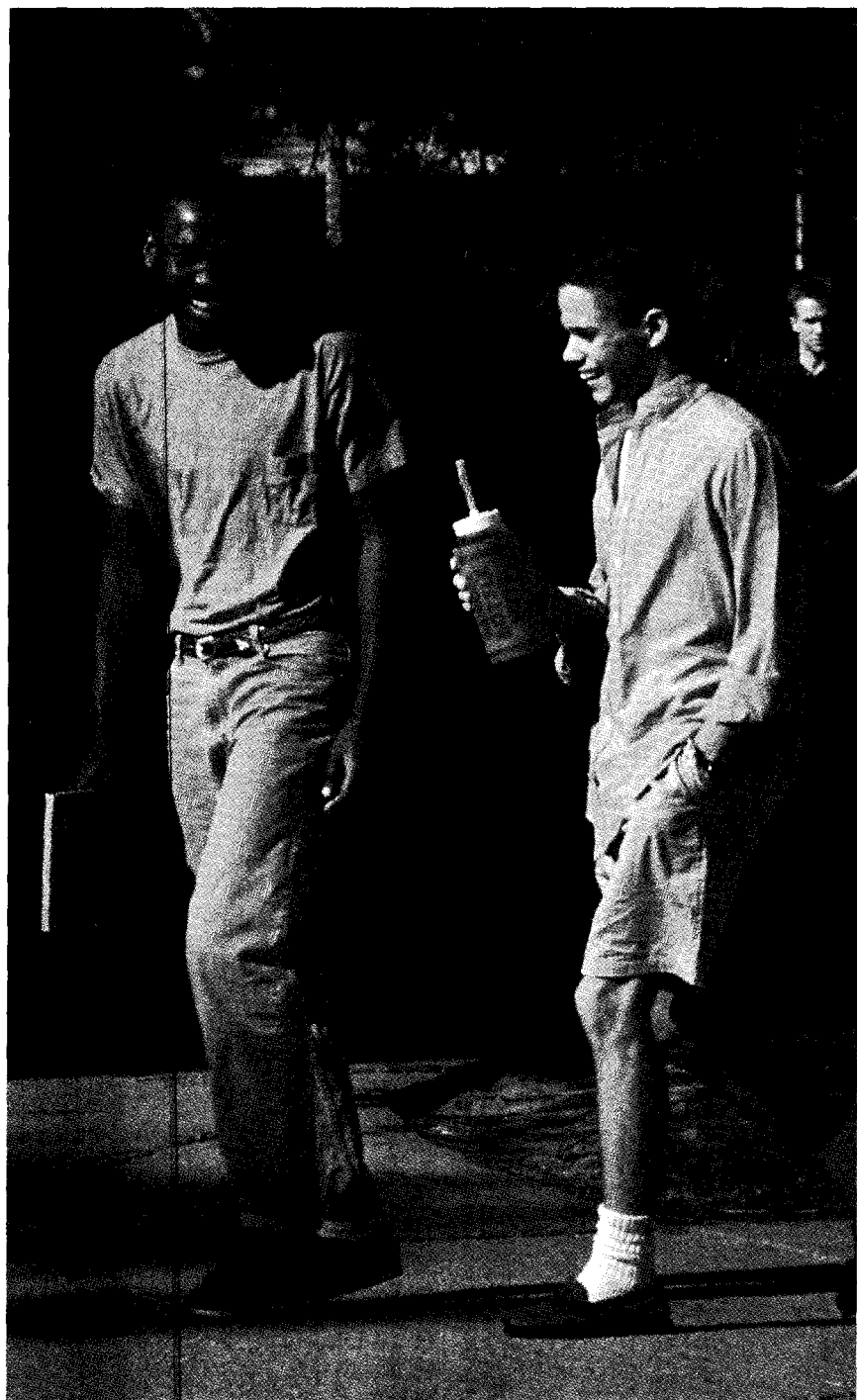
Any student found guilty of dishonesty in any examination or test or in written work of any character is subject to disciplinary action. The normal sanction is a failing grade on the piece of work involved, but a failing grade in the course is also a permissible sanction.

The student who wishes to appeal the action of a faculty member should follow the guidelines in the Student Protest and Appeals Procedure document, which can be obtained from the Provost's Office.

Application for Degrees and Certificates

In addition to the formal requirements for degrees described in the section on "The Academic Programs" beginning on page 51, 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 advisor 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 55 for details.





FINANCIAL INFORMATION

Tuition and fees

TUITION FOR THE ACADEMIC YEAR is \$7,350; room and board on campus is \$3,100; and the estimated cost for textbooks and classroom supplies is \$350.

Students taking fewer than three and one-half course units of credit in a semester will be charged on a per-course basis. 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 either completes at least three and one-half courses in one semester or completes 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, called a Denominational Grant, is available to members of the Christian Reformed Church in North America to reflect 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	\$3,675
Tuition, per course-unit rate	*930
Tuition, auditing, per course unit	465
Tuition, clinical years, B.S. in Nursing, academic year	9,366
Room and board, academic year	3,100

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

**After completion of six course units, part-time graduate students who have not had the opportunity to take an interim course will be entitled to one free course per graduate degree. Such students should check with the dean for academic administration to see if they qualify. This policy is subject to revision when the fee schedule is revised.*

DEPOSITS

Housing deposit	\$ 50
Physical education locker deposit	5

SPECIAL FEES

Application fee	\$20
Directed teaching fee	20
Off-campus program fee	75
Examination fee (course credit)	20
Examination fee (exemption)	5
Individual music instruction	
One hour weekly lesson per sem.	300
Half-hour weekly lesson per sem.	150
For concentrates, per sem.	225
Late installment payment fee:	
1% per month on outstanding balance	
Late registration fee	25
Placement fee, for students	15
for alumni	25
Residence hall social fee	20
Knollcrest East social fee	25
Transcript fee	2
Vehicle registration fee	10
Visitor fee, per course	15

Students are encouraged to pay their tuition, fees, room, and board in full at the beginning of each semester. For those who need to pay in installments, the following payment schedule applies.

DUE DATE	TUITION	ROOM & BOARD		
		21-meals	15-meals	10-meals
<u>1st Semester</u>				
At registration or validation	\$1845	\$700	\$700	\$700
September 26, 1990	610	240	230	210
October 24, 1990	610	240	220	200
November 20, 1990	610	240	220	220
<u>Interim & 2nd Semester*</u>				
January 9, 1991	\$ 920	\$420	\$410	\$390
February 6, 1991	920	420	410	390
March 6, 1991	920	420	410	390
April 3, 1991	915	420	390	380

*See section above regarding tuition for interium.

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 late payment fee of 1% per month on the outstanding balance. A penalty of \$50 is charged students who have not paid their bills in full, unless arrangements are made with the Financial Services Office by December 13 in the first semester and May 15 in the second. **Transcripts are not issued for students with past due accounts.**

Prospective freshman students are required to make an advanced tuition deposit of \$200 by May 1; prospective transfer students 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 9 and may apply for a refund before January 1.

Except for a 1% administrative fee, all tuition charges will be dropped for any student withdrawing from the college during the first week of the semester. Tuition charges will be prorated for students withdrawing from the college from the second week through the end of the eighth week of the semester. Tuition charges are due in full after the eighth week of the semester. The Denominational Grant for these students is prorated accordingly, and other financial aid of such students is reviewed and may be reduced. Students withdrawing from a single course will have their tuition charges for that course adjusted under the policies described above. Room and board fees will be prorated over the entire semester for students leaving on-campus housing. In addition, students leaving due to withdrawal from the college will have \$10 deducted from their housing deposit. Students moving off campus but remaining in the college will be assessed a \$100 charge.

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 admission information 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 carry 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.

Enrollment and Academic Progress Requirements. Most scholarship and financial aid programs require attendance at least half time or enrollment in a minimum of one and one-half course units per semester. There are two exceptions to this: 1) the Denominational Grant, which is not contingent on the number of courses for which a student is registered, and 2) the Michigan Adult Part-Time Grant which is available to students taking one or more but fewer than three courses.

Minimum enrollment for academic scholarships awarded by the college is two course units per semester, although many of the named scholarships assume full-time enrollment. Full-time attendance for financial aid requires enrollment in a minimum of three course units per semester and seven for the full year. Students who enroll at least half time but less than full time can be considered for financial aid but usually in reduced amounts.

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 25. These standards apply to Michigan Competitive Scholarships and Tuition Grants, to Calvin Scholarships, Grants, and Loans, to Pell Grants, Supplemental Educational Opportunity Grants, Perkins (National Direct) and Stafford (Guaranteed Student) Loans, Option 4 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 contribute regularly to Calvin College through denominational quotas receive a Denominational Grant. The amount of the grant is determined in part by the distance between the student's home and the college as measured in a direct line.

The home of an unmarried student under 24 years of age is considered to be that of his or her parents. 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. Students who are married or 24 or older will receive the grant based on their permanent residence.

Out-of-state students who meet the residency requirements for the Michigan Competitive Scholarship or Tuition Grant will be considered Michigan residents for purposes of the Denominational Grant. When the need of a student is met by the 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.

If a student enrolls in a combined curriculum course of study with another college, he or she will receive the Denominational Grant for students living within ten miles of campus for the period of enrollment in the program.

The Denominational Grants for 1990-91 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	100

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 upperclass students 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 300 scholarships are awarded annually to freshman students and more than 500 to upperclass students. Individuals may be considered for a named scholarship or departmental scholarship in addition to one of the general college scholarships described below.

General College Scholarships

Incoming freshman and transfer students are considered automatically for the general college scholarships described below on the basis of the information received at the time of admission and are not required to file a separate scholarship application form except as noted. For maximum consideration, freshman students must be

admitted by February 1 and transfer students by March 1.

The Calvin National Merit Scholarship is a four-year scholarship and is renewable for three years, as long as the recipient continues to attend Calvin College. The Presidential, Faculty Honors, and Honors Scholarships are available for four years as well if the recipient has a cumulative grade

point average of 3.50 or better at the end of the interim each year. Freshman students with one of these scholarships who do not have a grade point average of 3.50 or better at the end of interim will have the scholarship renewed if their cumulative grade point average is 3.50 or higher at the end of second semester.

Calvin National Merit Scholarships.

Calvin awards National Merit Scholarships to all National Merit Finalists who have a high school grade point average of 3.5 or better, have designated Calvin as their first choice college, and are not selected to receive another scholarship through the National Merit Corporation. The amount of the scholarship can range from \$1,900 to \$2,000 depending on need and provides, in addition, an allowance of \$50 for books other than textbooks for the freshman year. The minimum scholarship will be increased to \$2,000 in 1991-92.

Presidential Scholarships. Scholarships of \$1,900 each are awarded to the top forty or fifty incoming freshman students who are not selected to receive a Calvin National Merit Scholarship. To receive this scholarship a student generally needs a high school grade point average of 3.9, and an ACT composite of 30 or higher, or combined SAT scores of 1250 or higher, or a grade point average of 4.0, and an ACT composite of 29 or higher or combined SAT scores of 1200 or higher. Class rank is considered also, especially for students with weighted grades. These scholarships also provide an additional allowance of \$50 for books other than textbooks. Transfer students are considered for this scholarship if they have a cumulative grade point average at their previous college of 3.80 or higher. The amount of the scholarship will be increased to \$2,000 for 1991-92.

Faculty Honors Scholarships. Approximately one hundred scholarships of \$1,200 each are awarded to incoming freshman students who demonstrate outstanding academic achievement and potential but are not selected to receive a Presidential Scholarship. This scholarship is awarded automatically to students who are valedictorians if they have a grade point average of 3.50 or higher, and an ACT composite of 25 or higher, or combined SAT scores of 1000 or higher, and to National Merit Semifinalists who are not selected to receive a Calvin National Merit Scholarship. Others are selected on the basis of high school

grades, class rank, and ACT or SAT scores. Normally the following combination of grade point average and text scores is required:

GPA	Act Composite	Combined SAT's
4.0	26	1050
3.9	27	1100
3.8	28	1150
3.7	29	1200

Class rank is considered also, especially for students with weighted grades. Transfer students are considered for this scholarship if they have a cumulative grade point average of 3.65 or higher at their previous college. The amount of the scholarship will be increased to \$1,300 for 1991-92.

Honors Scholarships. Scholarships of \$550 are awarded to students in approximately the top 30 percent of the incoming freshman class who are not selected to receive one of the above scholarships. Normally, a grade point average of 3.50 or higher and an ACT composite of 25 or higher, or combined SAT scores of 1000 or higher are required for consideration. Transfer students who have a grade point average of 3.50 or better in their previous college work are considered for the scholarship if they do not receive a Faculty Honors or Presidential Scholarship. Students who do not have a scholarship when they enter Calvin will be awarded an Honors Scholarship for the sophomore, junior, or senior year if they have a cumulative grade point average at Calvin of 3.50 or better at the end of the interim of the preceding year. The amount of this scholarship will be increased to \$700 for 1991-92.

Academic Achievement Awards. Students who receive an Honors or a Faculty Honors Scholarship for a given year can receive a larger award for the following year if they have the appropriate grade point average. Honors Scholarship recipients will receive an Academic Achievement Award of \$650 in addition to the scholarship if they have a cumulative grade point average of 3.65 or better at the end of the interim, Faculty Honors Scholarship recipients with a cumulative grade point average of 3.80 or better at the end of the interim will receive a \$700 Academic Achievement Award in addition to their scholarship and Honors Scholarship recipients with a grade point average of 3.80 or higher at the end of interim will receive an academic achievement award of \$1350 in addition to their scholarship. These awards are granted

annually and are awarded each year the student has the 3.65 or 3.80 grade point average required.

Calvin Multicultural Scholarships. In keeping with the goal of making Calvin a more multicultural community, the College has established this scholarship program to encourage the enrollment of North American ethnic minority students. Scholarships of \$750 each are awarded to all prospective freshman students who are members of one of the four North American ethnic minority groups (Black, Hispanic, Native American/Canadian, Asian/Pacific Islander), have a high school grade point average of 3.0 or better, and are granted regular admission to the College. Those who have the grade point average required but are not granted regular admission are reviewed for the scholarship individually. For transfer students who are members of ethnic minorities, a grade point average of 3.0 or better is required in their previous college work. The scholarships are renewed automatically for up to four years for students who maintain a cumulative grade point average of 2.6 or higher at Calvin.

Stewardship Awards. Approximately 50 one-time Stewardship Awards of \$500 each are awarded to freshman and transfer students each year. Selection is based on the applicant's written demonstration of his/her stewardship of specific gifts and talents in two or more areas of activity such as music, art, drama, student government, school publications, church involvement, and community service. A clearly stated rationale for involvement, as well as breadth of involvement are criteria for selection. Applicants must have a minimum high school grade point average of 3.2 and be in the top half of the entering freshman class.

Stewardship Award applications are available from the Calvin Admissions Office and must be submitted before February 1. Applicants must also submit two recommendation forms (provided with the Award Application) completed by high school teachers and/or a church youth leader or minister. Stewardship Award recipients who are also selected to receive an academic scholarship will receive this award in addition to the scholarship. Recipients will be notified after March 1.

Campus Life Scholarships. Calvin College participates in the Campus Life Scholarship Program, coordinated by *Campus Life*

magazine and Christianity Today, Inc. Students who attend a church receiving a bulk subscription to *Campus Life* magazine are eligible to apply. Campus Life Scholarship applications are available from the pastor or youth pastor of the participating church and must be submitted before November 1. Recipients are selected by the Campus Life Advisory Board. The scholarship is a \$500 annual award and is renewable for up to four years.

Named Scholarships Funded by Donors

A number of scholarships and grants have been established by individual donors to recognize and provide financial support to students who meet the eligibility criteria described. Prospective freshman students are considered automatically for those scholarships open to them and do not need to file a separate scholarship application form except in the case of the Steelcase Scholarship, the Vander Brug Scholarship, and the SCORR Scholarship. Freshman students who wish to be considered for one of these scholarships should send a letter of application to the Office of Scholarships and Financial Aid. Returning students who want to apply for named scholarships must file an application with the Office of Scholarships and Financial Aid. The application deadline for returning students is March 1. Freshman applicants must be admitted by February 1 to receive maximum consideration.

Calvin Alumni Scholarships. Scholarships funded by the Calvin Alumni Association are awarded to approximately 20 incoming freshman students from the United States and Canada. These scholarships, of \$500 each, are awarded to students with good academic records (3.0 or higher) and are based on need. Preference is given to students who do not receive one of the other scholarships awarded by the College.

Clarence and Anne Beets Scholarship. Dr. William C. (Clarence) and Mrs. Anne Beets have contributed a gift to Calvin College, the income from which is used to provide two scholarships of \$1,000 each. 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. To be considered for a scholarship a student must be entering the junior or senior

year, demonstrate financial need, be making normal progress toward a degree, and have a cumulative grade point average of 2.5 or higher.

Beré Memorial Scholarship. The college has received a gift from Mrs. Jeanne L. Beré in memory of her late husband, Paul Beré, the income from which is used to award one scholarship of \$400 or more each year. The scholarship is awarded to a prelaw 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.

J. Russel Bouws Scholarship. A scholarship fund has been established in honor of Mr. J. Russel Bouws, founder of Russ' Restaurants in Holland, Michigan, by Mr. Howard De Haan, owner of the franchise for Russ' Restaurants in Kent County. Scholarships of \$500 each are awarded to students at Calvin who are employed by one of the Russ' Restaurants in Kent County. Prospective as well as current students are considered. Selection criteria include the student's academic record, character, motivation, financial need, and length of service with Russ'. Six scholarships were awarded for 1990-91.

Dr. and Mrs. Harvey J. Bratt Medical Scholarship. Harvey and Fran Bratt, medical doctor and registered nurse, respectively, have established a scholarship for worthy young people who plan to pursue a medical career and are in need of financial help. Dr. and Mrs. Bratt are both alumni of Calvin and have established the scholarship out of gratitude to the college for what it has meant to them and to God for what He has done for them. Two scholarships of \$750 were awarded for 1990-91. Eligibility requirements for the scholarship include: unquestioned Christian commitment, intention to enter a medical career, a cumulative grade point average of 3.0 or higher, and evidence of financial need. Applicants must be entering the junior or senior year at Calvin. Other factors that may be taken into consideration are: interest in medical missions, interest in service to the poor and needy, and ethnic minority status.

Calvin College Minority Grant. Gifts have been received from constituents and friends of the college to fund this grant program for North American ethnic minority students. 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. Normally, four or five grants of \$1,200 each are awarded each year.

The Chrysler Minority Scholarship. The Chrysler Corporation provides Calvin College funds to award scholarships to promising ethnic minority students who are residents of Michigan and plan to pursue a career in business or education. Four scholarships of \$2,500 each are awarded on the basis of financial need to one student in each class.

Dr. 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 prospective juniors and seniors pursuing preprofessional courses in medicine, dentistry, nursing, physical therapy, and related professions and paraprofessions. Three scholarships of \$1,200 each were awarded for 1990-91. Selection criteria include vocational interest, academic record, character, and need.

Emerson Minority Grant. Each year Calvin College receives a gift from Mr. and Mrs. James Emerson to be used for grants to North American ethnic minority students. Three grants of \$1,200 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 freshman students. 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 \$2,400. This is to be used to award 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.

The Jane Hosted Fisher Alumni Scholarship. The Butterworth Hospital School of Nursing Alumni Association established this scholarship for students in the Hope/Calvin Nursing Program. Seven scholarships of \$1,000 were awarded for 1990-91. Applicants must be accepted into the

Hope/Calvin Nursing Program and entering their junior or senior year. Financial need is a factor in the selection. A minimum cumulative grade point average of 2.0 is required for consideration.

Grand Rapids Foundation Scholarship. As a result of a bequest by the late Stephen D. Lankester to the Grand Rapids Foundation, eleven scholarships of \$500 each are available each year to sophomores, juniors, and seniors from Kent County. The primary purpose of this program is to provide assistance to students with good academic records (2.75 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 Veenstra in memory of her late husband Roger and son Bradley. Two scholarships of \$1,200 will be awarded to upperclass students 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.

Wilhemina Kalsbeek Memorial Scholarship. The family and friends of Wilhemina Kalsbeek have established a fund in memory of her and her missionary work in China from 1922 until 1949. The purpose of the scholarship is to assist with a Christian college education for students from mainland China who in turn can bring the Christian faith to the Chinese people. To be eligible for the scholarship a student should be from mainland China, committed to return to China, proficient in speaking and writing the English language, and qualified to do college level work. Other criteria considered in the selection include the student's academic potential, potential for Christian service in China, and financial need. Typically, one scholarship in the amount of \$1,000 will be awarded each year.

Dr. Harry Kok Memorial Scholarship. Two scholarships of \$1,200 are presented each year, in memory of Dr. Harry Kok, to juniors 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.

Leonard M. Krull Scholarship Aid Fund. As a result of a bequest to Calvin College by the late Leonard M. Krull of Westborough, Massachusetts, three scholarships are available each year to prospective freshman students from the Whitinsville, Massachusetts, area. The scholarships range from \$375 to \$750 with selection based on the student's academic record, ACT or SAT scores, and, in some cases, on financial need. The \$750 scholarships are renewable for up to four years. Selection is made by the Committee on Scholarships and Financial Aid of the college in consultation with a representative committee from the Whitinsville area.

Mephibosheth Scholarship. A scholarship has been established by an anonymous donor to provide scholarship assistance to students with physical disabilities. The donor, who has physical disabilities himself, has established this fund out of gratitude for all that God has done for him and has named it the Mephibosheth Scholarship because, as he indicates, "he too has dined at the King's table" (cf. II Samuel 9:13). First consideration for scholarships is given to prospective freshman and transfer students who have a physical impairment that is likely to continue indefinitely and who have the academic ability to be admitted as regular students. Preference is given to students who have financial need and to those who have an impairment that makes employment during the academic year less likely. Normally, one new scholarship of \$800-\$1,200 will be awarded each year. Scholarships are renewable for those who maintain satisfactory academic progress as required for other financial aid programs.

Amos Nordman Scholarship. 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. Six scholarships of \$500 each were awarded for 1990-91.

Theodore J. Peters Scholarship. A scholarship fund has been established by the late Mr. Theodore J. Peters, the income from which is used to provide scholarships to students from a number of West Michigan Christian High Schools. For 1990-91, a

scholarship has been awarded to one student at each of the following Christian high schools: Calvin Christian, Grand Rapids Christian, Holland Christian, Kalamazoo Christian, South Christian in Cutlerville, Unity Christian in Hudsonville, and West Michigan Christian in Muskegon. The number of scholarships awarded each year depends on the income from the fund and the amount of money awarded the previous year. The amount of the scholarship for 1990-91 is \$6,800 less the amount received from state and federal grant programs and from the college's Denominational Grant Program. Selection is made by the high school on the basis of the student's academic achievement, Christian character, leadership, and participation in extracurricular activities.

Reunion Class Scholarships. Each year donations are received from Calvin College graduates in a class reunion year. These contributions are designated for scholarships to promising students who need assistance to meet educational expenses. The primary criteria for selection include academic record and financial need. In 1989-90, twelve scholarships of \$500 each were awarded by the Class of 1939 and ninety scholarships of \$500 each were awarded by the Class of 1964.

Ryan Memorial Scholarship. Mrs. Lynne Lehocky and her father, Mr. Peter Hovinga, have established a scholarship in memory of Mrs. Lehocky's son, Ryan, who was severely disabled from birth and passed away in 1984 at the early age of seven. During his lifetime, the Hovinga family became especially aware of the compassion and commitment evidenced by those who work with handicapped children and have established the scholarship to recognize and encourage those who demonstrate such a commitment. One scholarship of \$1,000 is awarded each year. Candidates for the scholarship must be entering the junior or senior year, have a cumulative grade point average of 3.2 or higher, and be planning to enter the Christian ministry or planning to work with handicapped children. Other factors that will be considered include the student's character or commitment to the ministry or working with handicapped children as a lifelong commitment.

SCORR Scholarship. The Christian Reformed Church has authorized the Synodical Committee on Race Relations (SCORR) to provide scholarships of up to \$1,000 per

year to North American ethnic minority students 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 freshman students.

Spalink Memorial Missions Scholarship. The Spalink family has established a scholarship fund in memory of John Spalink, Jr., which provides one scholarship of \$600 each year. Its purpose is to encourage superior students to enter missions. The scholarship is awarded to a student 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.

Spectrum Colors, Inc. Each year Spectrum Colors, Inc. of Kalamazoo, Michigan, provides the college with funds for several \$1,500 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 from a list of nominees provided by the corporation.

Steelcase Foundation Scholarship. The Steelcase Foundation of Grand Rapids, Michigan, offers scholarships totaling \$4,000 annually to applicants who are children of Steelcase employees. Typically scholarships of \$500 each are awarded to two freshman students and six upperclass students. The recipients are selected by the Committee on Scholarships and Financial Aid of the college. Applicants are judged on the basis of scholastic ability, character, and need. Prospective freshman students who want to be considered for this scholarship must send a letter of application to the Office of Scholarships and Financial Aid at Calvin.

Edward C. and Hazel L. Stephenson Foundation Scholarship. Each year Calvin receives a gift from this foundation to be used for scholarships. For 1990-91, six scholarships were awarded in amounts of \$1,000 each.

The Student Offices Minority Grant. A scholarship fund has been established by

students from some of the student organizations on campus who wish to encourage the enrollment of ethnic minority students at Calvin. Each year these students contribute to this fund the money they would otherwise receive as an honorarium for their services. The college then matches these contributions with an equal amount from its own funds. Candidates for these grants must be prospective freshman or transfer students, have a cumulative grade point average of 2.5 or higher in high school or in their previous college work, and qualify on the basis of financial need. If needs are comparable, preference is given to students from the greater Grand Rapids area. Grants range from \$1,000 to \$1,500 each and are renewable as long as the student maintains satisfactory academic progress as required for other financial aid and continues to qualify based on need. Four grants of \$1,100 each were awarded for 1990-91.

Sullivan Scholarship. Each year Calvin receives \$1,000 from the Sullivan Scholarship Fund Trust to be used for one or two scholarships to incoming freshman students. The scholarships are awarded to needy students from high schools in the greater Grand Rapids area. Selection is made on the basis of academic achievement, leadership, character, and financial need.

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 ethnic minority students who have demonstrated potential for leadership in high school, 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 2.6 or higher, or if the grade point average for the previous year is 3.0 or higher. Need is not a requirement for the scholarship. Returning students are considered as well as incoming freshman students.

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 top students in any area. For 1990-91, four scholarships of \$1,200 each were awarded. Selection criteria include the student's academic record, character, and need.

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 upperclass students 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. One scholarship of \$500 is awarded each year.

Dr. Morris Wilderom Scholarship. The family of the late Dr. Morris Wilderom has established a scholarship in his memory to be awarded to students in medicine. Dr. Wilderom graduated from Calvin in 1931 and practiced medicine until his death in 1985. Candidates for this scholarship must be pursuing a premed program, entering the junior or senior year, and be in need of financial assistance. Other factors considered in the selection include the student's motivation, Christian character, and ability to contribute to the medical profession in future years. One scholarship of \$1,200 was awarded for 1990-91.

Woodlawn Christian Reformed Church Minority Scholarship. Each year the Woodlawn Christian Reformed Church of Grand Rapids, Michigan, provides the college with up to \$2,500 to be awarded to a North American ethnic minority student who is personally committed to Jesus Christ and His Church. The amount of the scholarship, which can range from \$1,000 to \$2,500, 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 freshman students.

Departmental Scholarships Funded by Donors

A number of other scholarships have been established by donors to recognize students in particular departments. Applications for these scholarships must be submitted to the department for which the scholarship is designated.

Alumni Association

Calvin Alumni Association Scholarships.

The Calvin Alumni Association awards up to six scholarships of at least \$1,200 each to students who have been active in volunteer work on and off the Calvin campus through membership and involvement in student and / or community organizations (where payment for services has been minimal or nonexistent.) Students who wish to qualify for these scholarships must also be able to articulate a connection between their volunteer activity and life goals, and have a minimum cumulative grade point of 2.5. Candidates should secure an application from the Alumni Office and return it by March 1. A team of Alumni Association Board members reviews the applications and interviews finalists.

Art Department

Sandra Bowden Art Scholarship. Mr. Robert Bowden, from New York, has established this scholarship in honor of his wife, Sandra, who is an artist. They want to encourage Christian artists to prepare to become leaders in the field of art. The \$750 scholarship is available to a sophomore, junior, or senior majoring in art who has a minimum grade point average of 2.5 or higher. The recipient is expected to send slides of his or her art to Sandra Bowden and also an explanation of his or her motivation for doing one work of art represented by a slide. See the secretary of the Art Department regarding photography.

The Pat Snyder Verduin Scholarship. The college has received a gift from Mr. Calvin and Mrs. Patricia Verduin of Grand Rapids, Michigan, the income from which is used to provide a scholarship of \$1,000 to a prospective junior or senior majoring in art. The purpose of the scholarship is to encourage artists who are Christians to prepare for a life of service in the field of art directed by Christian values. Candidates for the scholarship must have a minimum grade point average of 2.5 or higher and will be required to prepare a paper describ-

ing a work of art they have created. Financial need will be considered as well.

CAS Department

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.

The Department of Communication Arts and Sciences Scholarship for Telecommunications.

Contributions by friends of the Communication Arts and Sciences Department have made possible a \$250 scholarship, which is awarded annually to a junior telecommunications concentrate. The recipient is chosen on the basis of academic record, spiritual maturity, and exceptional promise for a career in mass communication.

Ann Janssen Noteboom Scholarship.

This scholarship was established by William and Ann Noteboom. Dr. Ann Noteboom taught at Calvin for thirty-five years. Up to two awards of \$500 will be awarded annually to returning junior or senior majors who show outstanding promise in the areas of oral interpretation and/or public address.

The John Miller Scholarship.

Rev. John Koole established this scholarship in honor of Mr. John Miller, who supported him in his love for music and drama and assisted him financially in his Calvin education. One scholarship of \$1,200 or more will be awarded annually to returning junior or senior majors who demonstrate excellence in theatrical ability. Candidates for this scholarship will be nominated and selected by the CAS Department.

Chemistry Department

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.

Economics and Business Department

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. Scholarships of \$1,000 are awarded each year on the basis of diligence, character, commitment to service of the Lord and mankind, promise of growth, and, in some cases, financial need. Although the student's academic record is not a primary factor, a grade point average of 3.0 or better is required.

Roels Minority Business Student Award. An annual award of \$200 is made available by Shirley and John Roels to a North American minority student studying business or economics who shows leadership promise in one of these fields. The award will be based on a student's academic record, spiritual maturity, and potential for a career in business or economics.

Jacob and Jennie Tuinstra Scholarship. Alumna Doris Tuinstra, in honor of her parents, has provided a fund to generate income for scholarships to be awarded to sophomore or junior women students for their junior or senior year at Calvin College in a business major, a B. S. in Accountancy program, or a group major with an emphasis in business. One scholarship of \$1,200 was awarded for 1990-91. Criteria for selection are primarily motivation and potential for Christian service in a business career, and secondarily academic record and financial need.

Herbert and Doris Vander Mey Scholarship. Mr. and Mrs. Vander Mey established this scholarship for majors in economics and business out of their conviction that Christian leadership is needed in all areas of human endeavor. This scholarship is intended to support students who demonstrate creativity and enthusiasm for meeting the changing management needs of an international and global economic order. Students entering the junior or senior year with a minimum grade point average of 3.0 are eligible to apply. One \$1,200 award was made for 1990-91.

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 fund to generate income for scholarships to be awarded to junior students for their senior year in a

business major or a B.S. in Accountancy program. Three \$1,200 scholarships were awarded for 1990-91. Criteria for selection include academic record and potential for Christian leadership in business.

Clarence and Nelly Battjes Scholarship. Clarence Battjes was a businessman who attended Calvin College from 1924 to 1925. His wife, Nelly, formed this scholarship in his memory in hopes of encouraging other Calvin students in their pursuit of business knowledge. Applicants must be junior or senior business majors with a minimum grade point average of 3.0. Two scholarships of \$1,500 will be awarded each year with the possibility of renewal for a second year.

Education Department

The DeVries—Post Teacher Education Scholarship. Mr. John W., Jr. and Dr. Arden R. (DeVries) Post have established this scholarship to assist future educators in the teacher education program at Calvin College. Because of their special interest in minorities and persons with disabilities, the scholarship is directed first to an individual from either of these groups who demonstrates financial need. If there are no students who qualify on this basis, other students with a cumulative grade point average between 3.0 and 3.5 will be considered.

Mol Family Scholarship. Mr. and Mrs. Jacob "Jay" and Lois Mol, on account of their strong feeling for Christian education at all levels, established this scholarship to help in the training of education students at Calvin College who intend to become career teachers in Christian elementary and secondary schools. Two scholarships, one in the amount of \$1,500 and the other in the amount of \$500, are to be awarded annually. Candidates for the larger scholarship shall demonstrate qualified eligibility for need-based financial aid; candidates for the lesser scholarship shall be those who are unable to qualify for need-based financial aid. Candidates must have been accepted into the Teacher Education Program at the time of application, be in their junior or senior year, and intend to make Christian school teaching their professional calling and vocation. Candidates must carry a minimum grade point average of 3.0.

The Fred and Carol J. Vanden Bosch Scholarship. This scholarship, established by

Mr. and Mrs. Fred Vanden Bosch, is provided to assist experienced Christian teachers to return to full- or part-time education in the Master of Arts in Teaching Learning Disabilities (LD) program at Calvin College. To be eligible for the scholarship, a student must be a professing Christian teacher, must be committed to continuing in his or her profession, and must be enrolled for graduate credit in a minimum of two courses per semester. The recipient will be required to assist in laboratory components of the MAT-LD courses, must demonstrate potential for advanced academic scholarship, and demonstrate financial need based on criteria for financial aid. The scholarship is awarded annually in amounts not to exceed \$750. Applicants should contact Ms. Myra Kraker for additional information.

George J. Van Wesep Memorial Scholarship. Each year Mr. and 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's 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, who have been accepted in the teacher education program, 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 1990-91, five scholarships of \$1,000 each were awarded.

The Vander Ark Family Scholarship. The Vander Ark family, known as the teaching family, has funded a scholarship which is available to students in the teacher education program at Calvin. Candidates for this scholarship must exhibit a strong commitment to Christian service, scholastic ability, diligent study habits, sound moral character, and a promise of growth in spiritual leadership. Normally, two scholarships are awarded in the amount of \$600 or more.

The Kevin Dale De Rose Memorial Scholarship. Kevin De Rose was killed in an accident during his junior year at Calvin in 1989. His family and friends have established this scholarship in his memory to be awarded annually to a student who dem-

onstrates a love for providing Christian service in non-academic areas of life. Candidates for this scholarship must be admitted to the teacher education program and have a cumulative grade point average of 3.0 or better. One scholarship of \$1,200 was awarded for 1990-91.

Engineering Department

The James Bosscher Engineering Scholarship. Former students and friends of Dr. Bosscher have generously funded a scholarship in his name. Scholarships will be awarded to incoming engineering freshman students who demonstrate outstanding academic achievement and potential. The number of awards and the value of each award will be determined by the amount of money available each year. Five \$1,000 scholarships were awarded for 1990-91. These scholarships are renewable for the sophomore year in the engineering program based on the first year's college performance, including the achievement of at least a 3.0 grade point average. Special consideration will be given to North American ethnic minority students.

Calvin Engineering Scholarship. The Kamstra family has established a scholarship of \$750 per year in the honor of the late Gordon Kamstra. Applicants should be entering the junior year as full-time students in the B.S.E. program in Engineering. A cumulative grade point average of 3.0 or higher is expected. Applicants must have completed a full year at Calvin before receiving the scholarship.

The William and Betty De Young Memorial Scholarship. A scholarship in memory of Mr. and Mrs. De Young has been established by their grandchildren. The purpose of the scholarship is to encourage engineering students to be Christian, liberally-educated engineers. Four or more scholarships will be awarded each year in the amount of \$750 or more depending on the amount of money available each year. Candidates for the scholarship must be prospective seniors majoring in engineering and must have a cumulative grade point average of 2.5 or higher. Other factors that will be considered include the student's character, motivation, ability to solve practical problems, potential for leadership, potential to contribute to the profession, and maximization of academic potential during the first two and one-half years of college performance.

Greiner, Inc. Architectural/Engineering Scholarship. Greiner, Inc. has established a scholarship of \$1,000 per year to encourage ethnic minorities and women to pursue architecture or engineering as a career. Applicants must be full-time students entering the junior or senior year in a B.S.E. program in Engineering or an A.B. program in Architecture (not yet established at Calvin). A cumulative grade point average of 2.5 or higher and full-time student status are expected. Applicants must have completed a full year at Calvin prior to receiving the scholarship and should be U.S. citizens or permanent residents of the United States.

History Department

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 to a junior history major. One \$900 scholarship was awarded for 1990-91.

Music Department

Alumni Players Music Award. The Alumni Players of Calvin College have provided the Music Department with funds to make an annual award of \$600 to an outstanding music major entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants shall be judged by the following criteria: proficiency in performance, participation in an appropriate faculty-directed ensemble or accompanying, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

The Leo Cayvan Award in Strings. An annual award of \$600 by Mrs. Leo Cayvan is offered to an outstanding player of violin, viola, cello, or bass viol entering the junior or senior year at Calvin College who has attended Calvin at least one 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, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for

which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

The James and Helen De Jonge Voice Award. An annual award of \$600 is given by James and Helen De Jonge to an outstanding voice concentrate entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants shall be judged on the basis of proficiency in performance, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private voice lessons for credit during the year the scholarship is used (except for music education students during student teaching).

The Douglas De Vries Church Music Award. An annual award of \$600 is given by Douglas DeVries to an outstanding student who has an interest in and aptitude for a career in church music. The award is for students entering the sophomore, junior, or senior year at Calvin College who have attended Calvin at least one year. Applicants will be judged by the following criteria: proficiency in performance as a singer or keyboardist, participation in an appropriate faculty-directed ensemble or accompanying, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

The Helene Hekman Gezon Voice Award. Contributions have been received by the Music 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 \$600 to an outstanding voice student entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants shall be judged on the basis of proficiency in performance as a singer, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

The Henry and Nellie Holtvluwer Music Award. Contributions have been received by the Music 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 \$600 to an outstanding music major entering the junior year at Calvin College who has attended Calvin at least one year. Applicants will be judged on the basis of overall grade point average.

Freshman Keyboard Scholarship. One award of \$600 is 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.

The Anne Noordeloos Keyboard Award. Contributions have been received by the Music Department in memory of Anne Noordeloos, mother and grandmother of students active in Calvin's music program. Interest from this fund provides annual awards of \$600 to an outstanding pianist or organist entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged on the basis of proficiency in performance at the keyboard, participation in an appropriate faculty-directed ensemble or accompanying, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

Oratorio Society Applied Music Scholarships. A number of awards of \$600 each are presented by the Calvin College Oratorio Society to prospective freshman students 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 a faculty-directed ensemble.

The John Scripps Wind Award. An annual award of \$600 is given by John Scripps to an outstanding performer on a wind instrument entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged by the following criteria: proficiency in performance, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

The Seymour Swets Voice Award. Contributions have been received by the Music Department in memory of Seymour Swets, the founder of Calvin's Music Department. Interest from this fund provides an annual award of \$600 to an outstanding voice student entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged on the basis of proficiency in performance, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

The John and Doris Van Dellen Music Scholarship. Contributions have been received by the Music Department from John and Doris Van Dellen, brother and sister, who have long had an interest in vocal music and in Calvin's music program. Interest from this fund provides an annual award of \$1,000 to a student musician entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged on the basis of proficiency in performance, participation in an appropriate faculty-directed ensemble or accompanying, and grade point average (minimum of 2.5). First consideration will be given to students who are outstanding in vocal music. Students are required to take private lessons for credit in the medium for which the scholarship is awarded in the year for which the scholarship is used (except for music education students during student teaching).

Vander Heide Voice Scholarship. An award of \$600 is offered annually by 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 freshman students are eligible. Applicants will be judged on the basis of evidence of talent and musicianship.

The Harold Geerdes Violin Award. Contributions have been received by the Music Department in honor of Harold Geerdes, former conductor of the Calvin College Orchestra, the Oratorio Society, and Professor of Music. Interest from this fund provides an annual award of \$600 to an outstanding violin student entering the junior or senior year at Calvin College who has attended Calvin at least one year. Applicants will be judged on the basis of proficiency in performance as a violinist, participation in an appropriate faculty-directed ensemble, and grade point average (minimum of 2.5 in music). Students are required to take private lessons for credit in the medium for which the scholarship is granted during the year the scholarship is used (except for music education students during student teaching).

Nursing Department

Bryan Dykstra Nursing Scholarship. The family 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. The scholarship will be awarded to a student who is pursuing nursing as a career, in recognition of all that Christian nurses did for Bryan before his death. One scholarship of \$600 was awarded for 1990-91.

The Holland Community Hospital Nursing Scholarship. Holland Community Hospital established this scholarship to recognize its strong tie with the Hope-Calvin nursing program. One scholarship of \$500 or more will be awarded to a student entering the first year of the program. Selection is made on the basis of the student's academic record, potential, and financial need.

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 Bach-

elor 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 \$950 each were awarded for 1990-91.

The Dr. Victor R. Ver Meulen Memorial Nursing Scholarships. Gifts have been received from Dr. Victor and Mrs. Mildred Ver Meulen of Grand Rapids, Michigan, to fund a scholarship in honor of their son, Victor R. Ver Meulen, Jr. Each year six or more awards of \$1,200 each will be made to students who are entering the junior or senior year of the nursing program. Selection is based primarily on the student's academic record and potential for Christian service in nursing. Financial need is considered as a secondary factor.

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

Political Science Department

DeKryger-Monsman Memorial Prize. As a result of a gift to Calvin College by Mrs. Gerald Monsman in memory of her husband, one prize is awarded each year to a junior political science major for use in the senior year at Calvin College. The award reflects academic achievement and potential. Financial need may be taken into account.

Peace and Justice Scholarship. Each year one or more scholarships are awarded to sophomore, junior, or senior students actively involved with global peace and justice issues, particularly related to the causes of war and conditions for peace in the nuclear age. Although initially funded by Calvin alumnus Paul Hoffman, contributions from like-minded constituents and friends are welcome. The number and amount of the scholarships are determined each year.

Psychology, Sociology and Social Work Departments

The Sociology and Social Work Department Award for Academic Excellence. Contributions by friends of the Sociology and Social Work Departments have made possible a scholarship to recognize an outstanding student in the junior year majoring in Sociology or Social Work. The recipient will be chosen by the departments on the basis of academic record and faculty

recommendations. One scholarship of \$550 was awarded for 1990-91.

The Vanderploeg-Edgerly Scholarship. Drs. Gretchen and David Edgerly have established this scholarship to recognize a promising student majoring in Psychology or Sociology or who has been accepted into the Bachelor of Social Work Program. Applicants must be entering the junior or senior year and have a cumulative grade point average of 3.0 or higher. In accepting the award, the recipient will agree to write a major paper on the topic of *child sexual abuse*. One scholarship of \$600 will be awarded for 1990-91.

Science Department

The John and Lilian Van Oosten Scholarship. As a result of a bequest to Calvin College by the late Dr. and Mrs. Van Oosten, five scholarships of \$1,200 each are available to students pursuing studies in the natural sciences. Scholarships are awarded to juniors and seniors primarily on the basis of the student's academic record and financial need. Candidates for this scholarship must have a minimum grade point average of 3.0 or higher.

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 \$2,400 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 \$2,300 per year to students whose parents' income is approximately \$30,000 or less. Since there are factors other than income considered in the evaluation, some with incomes above \$30,000 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 \$4,000 per year.

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 1990-91 is \$6,500.

Calvin Opportunity Grants. Because of a concern about the amount of money some students borrow to pay college expenses, Calvin has established a program of grants for students with exceptional financial need. The grants are awarded to students whose parents are not able to help them financially and who have not had the educational, social, and cultural opportunities that most other students have had. Since

one of the concerns of these students is their lack of financial resources and the amount of money they expect to borrow to pay college expenses, Opportunity Grants are provided to keep loans for these students at a reasonable level. The objective of the program for 1990-91 is that the total amount of loan and part-time work combined during the school year for a student who qualifies for this grant should not exceed \$2,600 to \$3,000. This means that in most cases loans for these students will be approximately \$1,600 to \$1,700. Without an Opportunity Grant, loans for these students would be approximately \$2,500 to \$3,000 per year. It is expected that grants will be awarded to about 20 or 25 students for 1990-91.

Exchange Grant for Canadian Students. An exchange adjustment program has been established by the college to offset in part the additional costs encountered by Canadian students resulting from the exchange on Canadian funds. This adjustment applies to tuition and room and board charges and is determined in one of two ways. 1) For students who qualify for need-based aid from Calvin, an adjustment is made to offset approximately one-half the additional cost resulting from the exchange. Part of this adjustment is reflected in a larger Calvin Grant than would otherwise be awarded, and part is reflected in the Exchange Grant. 2) For others, an adjustment is made so that the amount received is the same as the average received by those in the first category. For 1990-91, adjustments are expected to range from approximately \$400 to a maximum of \$1,000 for students in the first category. For students in the second category, adjustments will be \$590.

Michigan Adult Part-Time Grant Program. This program provides a limited amount of grant assistance to needy adult Michigan students who are enrolled in an undergraduate program on a part-time basis. To be eligible a student must have been out of high school at least two years, be enrolled for one or more but fewer than three courses, and qualify for financial aid as an independent student. Grants of up to \$600 per year are available for not more than twenty-four months of study. When there is not enough money to provide awards to all eligible applicants, preference is given to those with the greatest financial need.

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. The amount of the grant depends on the cost of the interim course and on the student's need. The maximum grant is \$500.

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.

Carl D. Perkins Loans. This program, formerly called the National Direct Student Loan, 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 to nine 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 maximum 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.

Robert T. Stafford (formerly the 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 \$4,000 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 pro-

gram 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.

Beversluis Awards in Christian Philosophy of Education. 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 each year to college or seminary 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.

Geology/Geography Outstanding Graduating Senior Award. Departmental awards are presented each year to the outstanding graduating senior with a major in Geology and/or the senior with a major in Geography. The recipient is selected by the Departmental Faculty.

The John De Bie Prize in History. In memory of Professor John De Bie an annual prize of \$50 is awarded for the best paper in history written by a Calvin student. Selection is made by the History Department faculty from submitted papers.

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 academic 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. 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 \$200 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 significant contribution to the department. The Department of Communication Arts and Sciences selects the nominee to receive the award.

The Beets Calvinism Award. The late Dr. and Mrs. Henry Beets established a fund, the income from which is used to award a

\$150 first prize and a \$75 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 Award. The late Mr. William B. Eerdmans, Sr., established the William B. Eerdmans Literary Award in the interest of encouraging original, critical, and creative writing among Calvin College students. The \$200 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.

Vander Ark Distinguished Teacher Education Student Award. The Vander Ark family, known for the number of family members who have served as teachers and administrators, sponsors annually an award by the Education Department to as many as four senior teacher education students who are nominated by their instructors for superior performance. The awards will be announced by May 1 of each year.

Henry Zylstra Memorial Award. In honor of the memory of Professor Henry Zylstra,

an award of \$200 is offered each fall to one or more senior English majors at Calvin who plan 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 chair 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.

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 freshman students. 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 to plan a 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 1990-91 is \$1,900. Applications should be in the hands of the Scholarship Committee of the college by March 1.



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 students should be introduced to the disciplines on two different levels.

In the first place, students 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 students 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 them 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 the 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 Science in Recreation, the Bachelor of Science in Nursing, the Bachelor of Science in Accountancy, the Bachelor of Science in Engineering, the Bachelor of Social Work, and the Master of Arts in Teaching. Cooperative bachelor of science degrees are offered with a number of other institutions in communication disorders, forestry, medical technology, and special education.

Bachelor of Arts, Bachelor of Science Degrees

Because of the complexity of the Calvin curriculum and the many alternative ways of meeting the formal requirements, students must confer with their advisors regularly in planning their academic programs.

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 requirements for the Bachelor of Arts degree are the successful completion of thirty-six courses, including three interims, of the designated liberal arts core, and of an approved concentration, typically 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.

Students who have completed at least fifteen courses in biology, chemistry, computer science, the earth sciences, engineering, mathematics, and physics 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.

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, 153.

One course in biblical studies, normally Religion 103. Any 200-level biblical studies course will also fulfill this requirement; however, interim courses are excluded.

One course in systematic or historical, study of religion, normally Religion 201. Any other 200- or 300-level religion course from the systematic or historical studies category will also fulfill this requirement; however, interim courses are excluded.

Two additional 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, 131, 143, 155, and 161; 221 and 222 are required of students in the elementary education programs.

One course in physical science from Astronomy 110, Astronomy 201, Chemistry 110, Geology 103, Physics 110, Physics 111, Physics 123-124, and Physics 223; students in the elementary education programs must take Chemistry 110, Physics 111 or Physics 212 plus Interdisciplinary 213.

One course in biology from 111, 114, 115, 116, or 131, which is required in pre-dental and premedical programs.

The two requirements in the biological and physical sciences may also be met by a year's work in Biology 131-233 or 131-232; Chemistry 103-104 or 113-114; Geology 151-152; Physics 123-124 when accompanied by 181-182, 126-225, or 221-222.

Interdisciplinary 210, History of Science, satisfies one course requirement in either physical or biological science.

Students, except for those in the elementary education programs, who have completed, with minimum grades of C, four years of college preparatory mathematics in high school are excused from the mathematics requirement; those who have completed with minimum grades of C three years 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 core 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, 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 (that is, excluding non-literature courses, e.g., cinema) from courses numbered 200 through 319.

One course in the other fine arts or in literature taught in a foreign language. These may be from Art 151, 231, 232, 233, 235, 236, 237, 238, 240, 241, Classics 221, 231, Music 103, 133, 233, 234, 236, 238, 241, Communication Arts and Sciences 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 three semesters of literature (excluding composition, creative writing, journalism, film, and mythology) or one year of art history or music appreciation are excused from this third requirement; however, every student must take at least one college core course in literature.

Courses in applied music, drama, and speech do not meet the fine arts requirement.

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

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

One course in speech from Communication Arts and Sciences 100, 101, 200, 240, or the passing of a competency examination. Communication Arts and Sciences 214 is acceptable only in elementary education programs.

One course unit (four quarter courses) in basic physical education, comprised of Physical Education 104 followed by three additional courses from 110 through 199; 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 who need review as part of their second year of language study. In no case, however, will students receive graduation credit for more than four courses from the 121–123 and 101–202 series in a given language. 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 the requirements in written rhetoric and in English or American literature.

A student usually should complete the core requirements in mathematics, history, and written rhetoric by the end of the first year and should complete the requirements in physical science, biological science, social sciences, 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.

Students in elementary education programs, whose choice of core courses is very limited, should confer with a program advisor in selecting core courses. The advisors are listed on page 60.

Certain professional-degree programs have a modified core curriculum approved by the faculty. These include accountancy (B.S.A.), engineering (B.S.E.), fine arts (B.F.A.), nursing (B.S.N.), recreation (B.S.R.), and social work (B.S.W.), whose model programs are described on pages 70–80.

II. INTERIM COURSES

A student must normally complete a minimum of three interim courses 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. Information is available from Mr. Henry Hoeks.

III. PROGRAMS OF CONCENTRATION (MAJORS AND MINORS)

Majors. 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 advisor and the completion of a counseling form which details the student's remaining academic requirements. Whenever students change their major, they must again submit a counseling 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 at least 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 average 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 91. Group majors designed for teacher certification programs are described in the section on Teacher Education Programs, on page 58 and following.

Students may also initiate interdisciplinary programs of concentration other than those formally approved by the faculty. Such group majors require a minimum of twelve courses, ten of which must be from two disciplines with no fewer than four from either. The remaining two must be chosen from a third discipline. Students must provide a written rationale for such programs, which require the approval of the registrar and of the chairs of the departments from which the ten courses are selected.

Minors. Optional six-course departmental minors and group minors are possible in certain fields. A C (2.0) average in the minor program courses is required for graduation in them. Most of the minors are described in the departmental sections of the catalog. The group minor in environmental studies is included 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 missions, under the Department of Religion and Theology. Only those minors described in the Teacher Education Programs section are approved for teacher certification. Group minors require the written approval of the designated advisor.

Special academic programs

The Honors Programs

Calvin College offers two types of honors program. The General Honors Program provides flexibility and independence for competent and self-motivated students. The Departmental Honors Program, which requires participation in the General Honors Program, intensifies the training in the major discipline and leads to an honors graduation designation.

Students are eligible for the General Honors Program if their cumulative grade point average is 3.3 or higher; incoming freshman students 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, and 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.

Full-time students with an average grade of A- (3.5) or higher for any semester and a cumulative average of 3.3 or higher will be placed on the Dean's List. The Dean's List is compiled at the end of each semester when grade reports are printed. Interim grades and subsequent grade changes normally do not alter the list.

The Academic Support Program

The Academic Support Program provides supportive services to students who have experienced difficulties in their academic programs or who desire to improve their academic performance. These services include review and developmental courses, personal academic counseling, and peer tutoring. Tutoring in most core subjects is available to those who secure the approval of their course instructor.

Special intensive classes in grammar and composition are offered for students who need a systematic review of language skills as well as for students for whom English is a second language. Mathematics review courses are available to students who have limited preparation in mathematics. A college-level reading, reasoning, and study strategies course is also offered. Course descriptions can be found on page 95.

The services of the program are available to any student upon request. Participation in the program is required of freshman students with conditional admission and students placed on academic probation.

Self-instruction in Languages Not Otherwise Taught at Calvin

Calvin has a limited program of supervised self-instruction in foreign languages not otherwise taught in the college curriculum. For 1990-91 the study of Russian is available 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 normally requires ten to fourteen hours per 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 comply with 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.

Adult Education: The Liberal Arts Core in an Evening Setting

The college now offers any student, but primarily those who cannot enroll in courses during the daytime hours, the opportunity to take courses in the evening.

On the following schedule, a student will be able to complete in about three years those courses that constitute the liberal arts core.

Fall 1990
Sociology 151 or Psychology 151
Biology 111
Communications 100

Fall 1991
English 100
History 102
Religion 103
Spanish 101

Fall 1992
Spanish 201
Mathematics 100
Philosophy 153

Spring 1991
A second history course
Religion-206
Philosophy 171

Spring 1992
Political Science 151 or Economics 151
Astronomy 110
Physical Education 104
Spanish 102

Spring 1993
Spanish 202
English 200
Art 151

Off-Campus Study Programs

The college offers a variety of off-campus study opportunities during the Interim term and regular semesters for students who want to study abroad and for those who would benefit from a different sort of academic experience in the United States than can be offered on campus.

Interim off-campus courses are named under departmental offerings and described in a separate Interim Catalog. Applications are available from the course instructors. For information about semester- and year-long programs, see pages 175-180.

The Coordinator of Off-Campus Study Programs is Mr. Henry Hoeks.

Programs for teacher education

Undergraduate Teacher Education Programs

Students wishing to become teachers must make formal application and be admitted to the teacher education program. Specified standards must be maintained to remain in the program and be recommended for certification. Because of the complexity of the various requirements to be met, and depending on the program followed in high school, it is possible that the program will take more than four years (36 courses) to complete.

Before taking any 300-level courses in the Education Department, students must apply for admission to the teacher education program. (Forms for application are available at the Department of Education.) To be eligible, students must have completed at least nine course units with a minimum cumulative grade point average of 2.5; must have completed at least 25 hours of supervised experience with school-aged people (students in special education must complete 25 hours in a special education setting); must have passing scores on the Preprofessional Skills Tests; and must complete with a program advisor a Secondary, Elementary, or Special Education Program Sheet and have this on file with the registrar. Students are allowed only five attempts to achieve passing scores on the Preprofessional Skills Test. Students in cooperative programs in special education with Grand Valley State University must complete Education 301-303 and Psychology 204 with a minimum grade of B- (2.7). Students should apply for admission in their freshman year. Transfer students may use course work and grade point averages from other institutions to meet these requirements for admission until a Calvin grade point average is established.

To be admitted to directed teaching, students must receive the positive recommendation of the instructor of Education 301, 303, and 322 (elementary), and, if in special education, also 216. Students must have a cumulative grade point average of 2.5; must have completed at least twenty-five course units, including at least six in the departmental or group major or minor concentrations; and must have the approval of each major and minor department and of the Education Department. In many cases, department approval involves passing a proficiency test in the discipline as well as demonstrating personal qualities important to effective teaching. Students normally should apply for their directed teaching assignment by March 1 prior to the academic year in which they expect to student teach, and no applications will be accepted later than fifteen weeks before the start of the semester in which the student intends to enroll in directed teaching. In addition students must have completed certain required education courses. These are specified in the *Teacher Education Program Guidebook*, available from the Education Department.



To be recommended to the State of Michigan 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 2.0, must be recommended by his or her college supervisor, and must have a cumulative grade point average of 2.5. Students are also required to pay a certification fee directly to the State of Michigan before receiving their certificates.

Transfer students, those entering teacher education tardily, and post-baccalaureate students must be admitted to the program if they seek teacher certification. They, too, must secure the appropriate forms from the Department of Education.

Students either not admitted or dropped from the program have the right to appeal in writing to a committee normally consisting of the chair of the Teacher Education Committee, a member of the Teacher Education Committee, and the chair of the Education Department Screening and Certification Committee. Further appeals relating to issues of due process may be made to the college Academic Standards Committee.

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 Academic Credit to be equivalent to their Grade 12 work, advanced credit given for Ontario Academic Credits 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 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.

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 Ms. 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 semester hours) 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.

The departmental advisors for education programs are as follows:

ART, Ms. Helen Bonzelaar, Department of Art

BILINGUAL EDUCATION, Ms. Edna Greenway, Department of Spanish

BIOLOGY, Mr. Steven Stegink, Department of Biology

CHEMISTRY, Mr. Arie Leegwater, Department of Chemistry

COMMUNICATION ARTS AND SCIENCES, Mr. David Holquist, Department of Communication Arts and Sciences

COMPUTER SCIENCE, Mr. Gary Talsma, Department of Mathematics

ECONOMICS, Mr. Eugene Dykema, Department of Economics

ENGLISH, Secondary: Mr. Kenneth Kuiper, Mr. William Vande Kopple, Mr. James Vanden Bosch; Elementary: Mr. Henry Baron, Mr. Gary Schmidt, Ms. Margaret Masson, Ms. Mary Ann Walters, Department of English

FINE ARTS, Ms. Helen Bonzelaar, Department of Art, Mr. Randall Bytwerk and Mr. David Holquist, Department of Communication Arts and Sciences

FRENCH AND GERMAN, Ms. Barbara Carvill, Department of Germanic Languages

GENERAL SCIENCE STUDIES, Elementary: Mr. Stan Haan, Department of Physics; Secondary: Mr. Steve Stegink, Department of Biology

GEOGRAPHY, Mr. Henk Aay, Department of Geology, Geography, and Environmental Studies

GEOLOGY (EARTH SCIENCE), Mr. James A. Clark, Department of Geology, Geography, and Environmental Studies

HISTORY, Mr. David Diephouse, Mr. Daniel Miller, Department of History

LANGUAGE ARTS, Mr. Henry Baron, Ms. Margaret Masson, Mr. Gary Schmidt, Ms. Mary Ann Walters, Department of English

MATHEMATICS, Mr. Gary Talsma, Department of Mathematic

MUSIC, Mr. Dale Topp, Department of Music

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

PHYSICS, Mr. Howard Van Till, Department of Physics

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

PSYCHOLOGY, Mr. Roger Stouwie, Department of Psychology

RELIGION, ACADEMIC STUDY OF, Mr. John Primus, Department of Religion and Theology

SOCIAL STUDIES, Mr. Robert Bolt, Mr. David Diephouse, and Mr. Daniel Miller, Department of History

SOCIOLOGY, Mr. Gordon De Blaey, Department of Sociology

SPANISH, Elementary: Ms. Edna Greenway, Secondary: Ms. Ynés Byam, Department of Spanish

Elementary education. Students interested in elementary education must secure copies of the *Teacher Education Program Guidebook* from the Department of Education. Programs should be worked out with the appropriate departmental advisor (see list above for the appropriate advisor) and have the approval of Mr. LeRoy Stegink, director of teacher education. The minimum elementary education program requires the completion of the general education requirements (see pages 52-54 for the courses recommended for studies in teacher education), and the completion of one of the following options for a concentration.

1. Three minors, consisting of a group minor of seven course units, *and* a single departmental minor of six course units in a department other than those included in the group minor, *and* a planned minor consisting of six course units in subjects relevant to the curriculum of elementary schools. It is recommended that students who intend to teach in middle school or junior high complete two departmental minors and a planned minor. Those intending to teach science on a middle or junior high level should complete a group science minor, a departmental minor, and a planned minor.
2. A major of at least eight and a half course units, *and* a planned minor of six course units in subjects relevant to the curriculum of elementary schools *or* a departmental minor of six course units.
3. A group major of at least ten and a half course units, *and* a planned minor of six course units in subjects relevant to the curriculum of elementary schools, *or* departmental minor of six course units.

In addition, prospective elementary teachers are required to take one course from each of the following groups. Students whose major or minors include none of these courses must complete a total of only two courses from the three groups:

1. English 325 or 326
2. Geography 101 or 110, or Environmental Studies 202
3. Psychology 201, 204, 207, 216 or Special Education 216*

*A course on exceptional children is required for certification in at least 17 states, including Illinois.

Students must complete the required education courses.

A nine-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; an eleven-course concentration from art and music.

Most students in elementary education programs, however, complete either the three minors program or group concentrations. Group concentrations are listed below, but students may consult the appropriate departmental advisor or the *Teacher Education Program Guidebook* for further advice.

Language Arts Studies Group Major. English 200 and Communication Arts and Sciences 214 are required. Students majoring in this group must also complete one of the following five-course departmental programs: English 200, 212, or 220; 325 or 326; 335; and two others; or Communication Arts and Sciences 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 eleven courses and the electives must be chosen from departments in this group with the approval of the language arts advisor.

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 Geography 101 or 110. Students must also complete one of the following five-course departmental sequences: Economics 221, 222, 323 or 324, and two 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 Geography 101 or 110; and two from 201, 210, and 220. Students may not take sequences in both psychology and sociology. The remainder of the eleven courses and the electives must be chosen from departments in this group with the approval of the social studies advisor.

General Science Studies Group Major. The five required courses for any concentration in this group are: Biology 111, 114, 115, 116, or 131; Chemistry 110, 113, or 103; Environmental Studies 201 or 202; Geology 100 or 103 (151, if more than one geology course is chosen); and Physics 111 or 212, and Interdisciplinary 213. In addition a student must complete one five-course and one three-course sequence listed below. The recommended five-course sequence in biology is 111 or 131; 114 or 233; 115 or 232; 116 or 311S; and one elective. In chemistry, 103–104 and three electives. In earth science, Geology 100; Astronomy 110 or 201; Environmental Studies 202; and two electives. In environmental studies, 201, 202, and 395; Geology 100; and one course from Biology 116, Geology 103, Chemistry 103, 111, and 113. In geology, 103 or 151; 152; 212; and two approved electives. In health science, Biology 131, 205, 206, 207, plus an approved interim course in health or 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, or 151; Physics 111 or 212, and Interdisciplinary 213; 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 studies, 201, 202, and Biology 116 or Geology 100. In geology, 103 or 151; 152; and 212 or 311. In health science, Biology 131, 205 and 206; or 131 or 111, 115, plus an approved interim course in health or nutrition. In physics, 123, 124, 181, 182, and one elective; or 221, 222, and one elective, or 111, 212, and one elective.

Fine Arts Studies Major. Required are Art 215, Communication Arts and Sciences 214, and Music 238 or, if the student is completing a five-course sequence in music, Music 339. 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 four semesters of 110, 120, 130, 140, 150, 160, 170, 131, 141, 161, or 171; or in drama, Communication Arts and Sciences 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; two from Music 133, 233, 234, or an approved interim, plus 238 or 339 and two semesters of applied music; Communication Arts and Sciences 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 advisor.

Language Arts Studies Group Minor. The seven required courses for this minor are: English 200, 212, 220, or 240; English 325 or 326; English 335; Communications Arts and Sciences 203 or 215; Communication Arts and Sciences 214; one course from the following: Communication Arts and Sciences 150, 215, 230, 253, or one other English course approved by the advisor; and an approved interim in the area of language arts.

Social Studies Group Minor. The seven required courses for this minor are: Economics 151; Geography 101 or 110; History 101 or 102; Political Science 201 or 210; Sociology 151 or 217; an approved course in United States history; and one elective from psychology, geography, political science, sociology, or history.

General Science Studies Group Minor. The seven required courses for this minor are: Biology 111, 114, 115, 116, or 131; Chemistry 103, 110, or 113; Environmental Studies 201 or 202; Geology 100, 103, 151; Physics 111, or 212, and Interdisciplinary 213 or Physics 123 and 124; and two additional courses from: Astronomy 110, 201, Biology 111 or 131, 114 or 233, 115 or 232, 116 or 311S, 207, Chemistry 103, 103–104, 113, 113–114; Environmental Studies 201, 202, Geology 100, 103, or 151; 152; 212; Physics 111, 212, 123–124 and 181–182, 221–222, and an approved interim in the area of science studies.

Fine Arts Studies Group Minor. The seven required courses for this minor are: Art 215; Communication Arts and Sciences 214; Music 238; a three-course sequence from one of the following: Art 205, 215, 231 or 232, and an approved art interim course; Communication Arts and Sciences 203, 214, 217, and an approved Communication Arts and Sciences interim course; Music 233, 234, and 238; a two-course sequence from one of the following: Art 215 plus an approved art course; Communication Arts and Sciences 214 plus an approved communication arts and sciences course; Music 238 or 239 plus an approved music course; and one approved elective or interim course in communication arts and sciences or music.

The appropriate departmental minors are listed under each department in this catalog.

The appropriate education courses for students in elementary education are 301, 303, 304, 305, 309, 322, 324, 325, and 345. 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, 115, 116, or 114, English 100 and any literature course in English or in a foreign language; Geography 101 or 110, Geology 100 or 103, History 101 or 102 and any other history course, Mathematics 100, 221, 131, or 161, Music 238 or 339, Physics 111 or Physics 212, and Interdisciplinary 213, Psychology 204, Political Science 151, 201, or 210, and Communication Arts and Sciences 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 advisor is Mr. John Primus of the Department of Religion and Theology.

Secondary education. The minimum secondary program requires the completion of the general graduation requirements (see pages 52–54 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 eight professional education courses. Students interested in secondary education should obtain copies of the *Teacher Education Program Guidebook* from the Department of Education. Programs should be worked out with the appropriate departmental advisor (listed on page 60) 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, geography, geology (earth science), German, history, Spanish, 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 psychology, religion and theology (the academic study of religions), and sociology.

Group concentrations 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, literature in a foreign language, speech), the sciences (earth science, biology, chemistry, 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 each 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 a departmental 359.

Special education. Calvin College offers a program in special education, which leads to teacher certification at the elementary 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, and for students graduating in 1990-91, two ten-week directed teaching experiences.

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 or emotionally 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 a 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 Ms. 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. Students major in Spanish and minor in Bilingual education. 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 background in American history, or 356, Social and Cultural History of the United States.

The advisor for this program is Ms. Edna Greenway 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, 304, and two to three course units of teaching internship or the equivalent. Prospective elementary teachers must complete Education 305, 309, 322, IDIS 213, Math 221, 222, and Education 324-25. Prospective secondary teachers must complete Education 307-308 and a departmental 359. Certification requirements for teaching majors and minors must also be met.

Requests for admission to this program should be addressed to the director of teacher education. To be eligible students must have a bachelor's degree from an accredited college or university, a minimum cumulative grade point average of B- (2.5), two letters of recommendation, 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, Ms. Madge Strikwerda. Information regarding majors and minors should be obtained from the appropriate departmental advisor as listed on page 60.

Students in this program must pass competency tests in English, mathematics, and reading before permission for directed teaching will be granted. Students should take the competency tests before being admitted to the teacher education program or, if transfer students, immediately upon arrival at Calvin College. Information regarding test dates can be obtained from the Education Department.

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 advisor (as listed on page 60) 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 2.0 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 this program must be addressed to the dean for academic administration and designated Non-Degree Program for Continuing Certification. Information regarding teacher certification should be obtained from the director of teacher certification, Ms. 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 at the elementary or secondary level.

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—Elementary or Education 583, Curriculum and Instruction: Learning Disabilities—Secondary, Education 548, Practicum: Learning Disabilities—Elementary or Education 549, Practicum: Learning Disabilities—Secondary (1.5 units), Psychology 511, Introduction to Guidance and Counseling (for those seeking a secondary endorsement).

Application to Calvin College and to this program should be made to the dean for academic administration. The advisor for this program is Ms. Myra Kraker.

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

The program includes the following courses: Art 215, Art for the Classroom Teacher; Psychology 151, Introductory Psychology; Psychology 313, Mental

Health in the Classroom; Special Education 216, Education of Exceptional Children; Special Education 306, Mental Retardation; Special Education 310, Diagnosis and Prescription: Mentally Impaired; Special Education 330, Curriculum and Instruction: Mentally Impaired; and Special Education 347, Directed Teaching; Mentally Impaired.

Application to Calvin College and to this program should be made to the dean for academic administration. The advisor for this program is Mr. Thomas Hoeksema.

Post-Baccalaureate Non-Degree Education Program Leading to a Michigan Endorsement in Early Childhood Education

This program is for those who have a bachelor's degree and a valid teacher certificate, and who wish to obtain an endorsement in Early Childhood Education.

The program includes the following courses: Psychology 204, Developmental Psychology: Child; English 329, Linguistics; or English 531, Language and the Elementary Classroom; Education 536, The Young Child in an Educational Setting; Education 537, Curriculum Theory and Development: Early Childhood Education; Education 539, Current Issues in Early Childhood Education; Education 547, Early Childhood Education Curriculum and Instruction: Field Experience.

Application to Calvin College and to this program should be made to the Graduate Office. The Advisor for this program is Ms. Yvonne Van Ee.

Preprofessional programs

The programs in this section prepare students for admission to professional graduate schools while also meeting the requirements for a Bachelor of Arts or Bachelor of Science degree from Calvin.

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 pages 52-54. The prelaw advisor, 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. Prewlaw students should declare their interest in law at registration time and are advised to consult the prelaw advisor 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 advisor.

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 advisor for the premedical and pre dental programs. Students should also note the general college admission requirements on pages 52-54.



A student may select any major concentration and still meet the entrance requirements for most medical and dental schools. However, nationwide the majority of the applicants to medical and dental schools are biology majors. (See page 102 for program description.)

For those students not majoring in biology, the minimum science requirements for entrance into nearly all medical or dental schools are met by the following: Biology 131, 232, and two course units from 321, 323 (recommended), 331, 333, 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 predental 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 for the degree of Bachelor of Science in Letters and Medicine, or Bachelor of Science in Letters and Dentistry on the combined curriculum plan.

Students who desire to secure a baccalaureate degree on the combined curriculum plan must notify the Registrar's Office by April 1 of the year in which they expect to receive the degree.

Ministry

The Association of Theological Schools (A.T.S.) recommends that pre-seminary 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 pre-seminary period, that Latin is important, and that modern languages are valuable. Pre-seminary 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.

The advisor for all preministry programs is Mr. Louis Vos of the Religion and Theology Department.

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 admissions requirements of the seminary for the specific programs. A grade point average of 2.67 or higher is required for admission. College concentrations of particular relevance for subsequent seminary studies are classical civilization, English, Greek, history, philosophy, psychology, sociology, and theology.

To enter the Master of Divinity (M.Div.) program, Calvin Seminary requires the following courses for admission:

1. Language: at least two years of Greek, plus two years of another foreign language.
2. Humanities: a total of at least 8 courses in English, history, and philosophy, with at least two semester-length courses each in literature, history, and philosophy (preferably history of philosophy).
3. Natural science, social science, and speech: at least two courses in each.

The seminary encourages Calvin College students who plan to enter the Master of Divinity program to satisfy the above requirements by including the following courses in their programs: Greek 205–206; Philosophy 251 and 252; and Communication Arts and Sciences 100 and 200. Communication Arts and Sciences 203 and 240 are recommended and, in exceptional cases, either of these courses may be substituted for Communication Arts and Sciences 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. This does not apply to the Greek requirement.

Calvin Seminary's Master of Arts in Educational Ministry 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 generally 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 Arts in Missions and Church Growth program prepares persons for leadership in professional settings such as missions and para-church organizations. Admission requirements are generally met by Calvin College graduation requirements, but must include at least three courses in the social sciences, one of which must be in Social or Cultural Anthropology.

Calvin Seminary's Master of Theological Studies program is designed for those who do not seek ordination but desire a theological education with a view toward 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.

Professional-Degree Programs

Accountancy (B.S.A.)

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 advisor.

The Bachelor of Science in Accountancy program requires eight courses in accounting (Business 203, 204, 301, 302, 305; three from 306, 310, 311, and 315), eight courses providing a general background in business and economics (Business 350, 260, 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. This requirement differs slightly from the liberal arts core described on pages 52-54. It 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 quarter course in basic physical education for each year in residence.

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

<i>First year</i>	COURSES
English 100	1
History 101 or 102	1
Mathematics 143-132 or alternative mathematics cognate	2

<i>First year</i>	COURSES
Philosophy 153	1
Psychology, sociology or political science core	1
Religion and theology core	1
Fine arts core	1
Interim elective	1
Physical education	1-4
 <i>Second year</i>	 COURSES
Business 203, 204, 260	3
Economics 221, 222	2
Physical education	1-4
Communication 100 or 240	1-2
Computer science	1
Literature core	1
Natural science core	1
Interim elective	1
 <i>Third year</i>	 COURSES
Business 301, 302, 305, 306, 315	5
Economics 323, 324, 325, or 326	1
Foreign culture core	1
History, philosophy, or religion and theology core	1
Interim elective	1
Physical education	1-4
 <i>Fourth year</i>	 COURSES
Business 310, 311, 370	3
Business 380, 350	2
Economics 331-339, or a second course from 323-326	1
*Electives (may include 319 for CPA candidates)	3
Physical education	1-4

*Note: A minimum of eighteen course units must be taken in departments other than Economics and Business.

Visual arts (B.F.A.)

Students who are interested in the Bachelor of Fine Arts degree (B.F.A.) program at Calvin should consult with Mr. Carl Huisman of the Department of Art, faculty advisor for the B.F.A. program.

A student wishing to obtain a Bachelor of Fine Arts degree 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. Application forms and additional requirements for admission are available in the Art Department. Submit applications the first week in October or the last week of March.

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), one of which must be 310 or 311; 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. Five courses in history, philosophy, and religion

One course in history from 101 and 102

Two courses in philosophy: 153 and 208

Two courses in religion: one course in biblical studies and 301 (note: IDIS W-10 (CPOL) no longer satisfies the core for B.F.A. students)

2. Two courses in mathematics and the sciences

One course in mathematics

One course in natural science from astronomy, biology, chemistry, geology, and physics

3. Two courses in the social sciences

One course in economics or political science

One course in psychology or sociology

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

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

One course from Communication Arts and Sciences 100, 101, 200, 240, or the passing of a competency examination

One course unit (four quarter courses) in basic physical education: 104 followed by three additional courses from 110–199

5. Three or four courses from literature, the other fine arts, and foreign language

One course in English, American, or world literature

One course from art, music, or communication arts and sciences

One course from literature, music, communication arts and sciences, or a high school exemption (but not in art). Two units of foreign language also satisfies this third requirement.

Engineering (B.S.E.)

Engineering is a design-oriented profession applying the principles of mathematics, science, economics, ethics, social sciences, and humanities with judgment to the utilization of energy and materials for the benefit of humanity. Within this context students are aided in the development of a thorough-going Christian perspective toward technology and its application. A primary goal of the department is to educate Christians to serve the Lord and others through technology.

To this end, students at Calvin College may prepare to be engineers by following a program leading to a Bachelor of Science in Engineering (B.S.E.) degree with concentrations in civil, electrical, or mechanical engineering. This curriculum is accredited by the Engineering Accreditation Commission of the

Accreditation Board for Engineering and Technology (ABET). The B.S.E. degree is intended to prepare graduates for entry-level employment as engineers and and for graduate study. Students interested in engineering should consult the department chair, Mr. Lambert Van Poolen.

Students 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-half technical and basic science courses and seven and one-half courses from the liberal arts core. The common model program is as follows:

<i>First year</i>	COURSES
Chemistry 103	1
Engineering 101, 102	1- 1/2
Mathematics 161, 162	2
Physics 126, 186	1-1/4
Interdisciplinary W10, history, religion and theology core	1
Economics 151	1
English 100	1
Computer Science 141	1/2
Physical education, basic	1/2
 <i>Second year</i>	 COURSES
Engineering 202	1
Engineering 205	1
Engineering 204	1
Engineering 284	1/4
Mathematics 231, 261	2
Physics 225	1
Social science core	1
Philosophy 153	1
Literature core	1
Communication Arts and Sciences 100	1/2
Physical education	1/2 or 1/4

The above courses plus thermodynamics (310) and the senior design project courses (339, 340) provide a common core for the three concentrations in the B.S.E. program. Each concentration consists of six required engineering courses: Civil Engineering, 305, 309, 313, 320, 326, and 327; Electrical Engineering, 302, 304, 307, 311, 325, and 332; Mechanical Engineering, 305, 309, 316, 317, 324, and 329. Because all students take the same project courses there is opportunity for interdisciplinary projects. The electives available also provide opportunity for students to develop an interdisciplinary flavor in their programs. The Engineering Seminar courses, 294 and 394, encourage the students to further broaden their perspectives. Hence, while the B.S.E. program requires some focus on a particular concentration there is opportunity for a broad education preparing students in the multi-faceted world of engineering design and professional practice.

Admission. The minimum requirements for admission are the completion of the first two years of the 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, and 225; and a minimum grade of C (2.0) in the engineering courses and in Mathematics 231 and 261. Students must apply for admission to the Department of Engineering during the

semester in which they are completing the common first two years of the model program and they must indicate their selected concentration. After a student is accepted, the chair of the department will prepare a counseling sheet for the student, indicating the remaining requirements.

Probationary Admission. Probationary admission is available to assist certain students. Students who wish 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 be 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 reapply 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 chair of the department. (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.)

Transfer Student Admission. Students wishing to transfer from another school should apply to the Office of Admissions. In general, transfer students must meet the same course requirements as students who begin their programs at Calvin. No course completed with a grade below C (2.0) will receive transfer credit.

Transfer students must arrange for an analysis of transcripts by the department chair well in advance of course advising. In addition, those who wish to take 300-level courses in their first semester at Calvin must:

1. have a 2.5 grade point average at their previous school,
2. provide a letter from that school indicating that the student was in good academic and personal standing, and
3. receive either probationary admission or regular admission or possibly special permission from the chair.

Calvin's engineering program emphasizes the integration of Christian faith and a professional engineering education. This integration takes place in many ways. For this reason a student seeking a B.S.E. degree from Calvin should be part of the program for no less than four semesters as a full-time student at Calvin. It is also stipulated that at least one non-technical course be taken for each semester at Calvin.

Notes Regarding Admission and Graduation. All students must display a high degree of personal integrity to be recommended for admission. After admission to the engineering program, the student must continue to make adequate progress toward fulfilling graduation requirements (a grade below C- in a 300-level course is an example of inadequate progress; see the chair of the department for further details). In addition to an overall, college-wide grade point average of 2.0, the student must obtain a grade point average of 2.0 in all engineering courses completed at Calvin to be eligible to graduate.

Third and Fourth B.S.E. Years. The final two years of the B.S.E. program require eighteen courses: seven required technical courses containing engineering science and / or engineering design content, the engineering special topics

interim, one and one-half course units in senior design project, one basic science elective (such as an appropriate course from the major concentration in Chemistry, Geology or Physics; or Astronomy 201; or a 100-level Biology course), and one course as an engineering elective, one-half course unit in business, one advanced mathematics course, four liberal arts courses, and one technology / humanities interim course. The engineering special topics interim is designed by the department to have a content of half engineering science and half engineering design. The elective in engineering must include the minimum total of one-half course unit in engineering science. Eligible courses having at least one-half engineering science content are 302, 304, 305, 306, 307, 309, 311, 313, 314, 315, 316, 317, 320, 324, 326, 328.

<i>Civil engineering concentration, third year</i>	COURSES
Engineering 305, Mechanics of Materials	1
Engineering 309, Fluid Mechanics	1
Engineering 320, Hydraulic Engineering	1
Engineering 326, Structural Analysis	1
Basic science elective	1
Engineering 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 310, Thermodynamics	1
Engineering 313, Soil Mechanics and Foundation Design	1
Engineering 327, Structural Design	1
Engineering 339, Senior Design Project	1/2
Engineering 340, Senior Design Project	1
Advanced mathematics elective	1
Business 357, Business Aspects for Engineers	1/2
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, Advanced Network Analysis	1
Engineering 311, Electronic Devices and Circuits	1
Engineering 332, Analog Circuits and Systems Design	1
Basic science elective	1
Advanced mathematics elective	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 325, Digital Circuits and Systems Design	1
Engineering 302, Engineering Electromagnetics	1
Engineering 339, Senior Design Project	1/2
Engineering 340, Senior Design Project	1
Engineering 310, Thermodynamics	1
Engineering elective	1
Business 357, Business Aspects for Engineers	1/2
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 316, Heat Transfer	1
Engineering 324, Materials and Processes in Manufacturing	1
Basic science	1
Fine arts elective	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 339, Senior Design Project	1/2
Engineering 340, Senior Design Project	1
Engineering elective	1
Advanced mathematics elective	1
Business 357, Business Aspects for Engineers	1/2
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 department chair 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-and-one-half course units at Calvin may apply for a Bachelor of Science in Letters and Engineering degree from Calvin.

Note: The combined curriculum degree program will not be available for students entering Calvin after 1990. Students who wish to pursue a career in Chemical Engineering should consult with the department chair regarding a Chemistry or Chemistry-Engineering group major followed by a master's degree in Chemical Engineering.

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

Nursing (B.S.N.)

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 experience within the context of a Christian liberal arts education. It is designed to prepare beginning practitioners of nursing who are capable of integrating their knowledge, skills and attitudes to provide quality nursing care for people of all ages and in a variety of settings. 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 acting chair of the department, Ms. Bethany Gordon, 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 pre-nursing program. Those interested in nursing are asked to indicate their interest at the time they begin their studies at Calvin, so they will be counseled by advisors for the nursing program. A limited number of transfer students can be accepted.

The two-year pre-nursing program requires nine courses in the sciences and social sciences closely related to nursing (Biology 131, 205, 206, 207, 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; a course in the fine arts; another course in fine arts, literature or foreign culture; a course in written rhetoric; a half course in speech; and one course unit 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 Office of the Registrar. To be eligible for admission to the nursing program, a student must have completed the eighteen courses in the pre-nursing program, nine of which must be the required courses in the natural and social sciences. A minimum cumulative grade point average of C+ (2.3) is required, as well as a minimum grade of C- (1.7) in each of the natural and social sciences courses, and a minimum grade point average of C (2.0) for all natural and social science courses, and a minimum grade point average of C (2.0) for all natural and social science courses. Since enrollment in the final two years—the clinical nursing years—is limited, admission is selective, and completion of the pre-nursing program does not assure acceptance.

The third and fourth years require fourteen and one-quarter professional courses and four liberal arts electives, one of which must be a course in mathematics unless the student has completed four years of college preparatory mathematics in high school. The required courses are: 301, 312, 321, 346, 352, and 375 in the junior year; and 401, 425, 472, 474, and 482 in the senior year.

The typical nursing program is as follows:

<i>First year</i>	COURSES
Biology 131, 205	2
Chemistry 113, 114	2
Psychology 151	1
Sociology 151	1
English 100	1
Fine arts core	1
Religion, history, philosophy or Interdisciplinary W10, core	1
Physical education	1/2

<i>Second year</i>	COURSES
Biology 206, 207	2
Psychology 201	1
Religion core	1
History core	1
Literature core	1
Philosophy core	1
Fine arts, literature or foreign culture	1
Communication 100	1/2
Physical education	1/2
 <i>Third year</i>	 COURSES
Nursing 301, 312, 321, 346, 352, 375	7-1/4
Mathematics 100 or 143 (or elective for students with high school math exemption)	1
Elective	1
 <i>Fourth year</i>	 COURSES
Nursing 401, 425, 472, 474, 482	7
Electives	2

The nursing courses are described on pages 173–175 under the Department of Nursing. Other courses are described under the department indicated.

Social work (B.S.W.)

The Bachelor of Social Work degree is aimed at students who want to prepare for a career of Christian service as a professional generalist social worker. The program is carried out in the context of the mission of Calvin College which is to offer a Christian education enriched by the insights of the Reformed heritage. Upon completion of the program, students are prepared for entry-level professional social work positions. The B.S.W. is a recent development at Calvin, and the college is currently in the process of seeking accreditation from the Council on Social Work Education.

Students who wish to pursue a B.S.W. will normally make application to the Director of Social Work by February 15 of their sophomore year. Decisions about admission to the program are made by a committee of social work faculty and are based on the following criteria: 1) Students must have completed at least 10 course units including Social Work 240, and either have completed or currently be enrolled in Biology 115, Psychology 151, and Sociology 151, and Social Work 250. 2) Students must have a minimum grade point average of 2.3 and a minimum grade of C- in each of the four courses just specified. 3) Students must have completed at least 50 hours of social work volunteer or paid service and must submit a letter of reference from an appropriate supervisor. 4) Students must submit a written personal statement which includes information about their personal values, their commitment to social work as a vocation, and their relative strengths and weaknesses as potential professional helpers. Since enrollment in the community-based practicum is limited, admission to the program is also limited and, therefore, fulfillment of the admission requirements cannot guarantee admission.

The B.S.W. is composed of an eleven course social work major and several core requirements. The social work major includes theory courses, social work practice courses, and practicum courses in community agencies (Social Work

240, 250, 320, 350, 360, 361, 370, 371, 372, and two units of 380). Once admitted to the program, B.S.W. students must make separate application to the practicum. Some students may complete their practicum courses through the Chicago Metropolitan Program during the second semester of their senior year. The core requirements include courses from the contextual disciplines (5), mathematics and natural sciences (3), social sciences (2), arts and literature (3), competencies (3), and foreign language (4). Some core requirements are specified as can be seen from the following model program:

<i>First year</i>		COURSES
English 100		1
History core		1
Religion core		1
Mathematics core		1
Biology 115		1
Psychology 151		1
Language 101 and 102		2
Physical education		1/4
Interim course		1
 <i>Second year</i>		 COURSES
Communications 240		1
Fine arts core		1
Philosophy core		1
Social Work 240, 250		1
Sociology 151		2
Language 201 and 202		2
Physical education		1/4
Interim course		1
 <i>Third year</i>		 COURSES
Fine arts core		1
Literature core		1
Religion core		1
Physical science core		1
Social Work 320, 350, 360, 370		3
Physical education		1/4
Interim course		1
 <i>Fourth year</i>		 COURSES
Contextual core		1
Social Work 361, 371, 372, 380, 380		5
Electives		2
Physical education		1/4

The social work courses are described on pages 204–207 under the Department of Sociology and Social Work. Other specified courses are described under appropriate departments.

Recreation (B.S.R.)

Students who wish to enter the field of recreation services, which includes such specialty areas as therapeutic recreation (recreation therapy), recreation management, youth leadership, and commercial and outdoor recreation, should complete the degree requirements for the Bachelor of Science in Recreation. The program requires eight and one-half course units in recreation (met by 201, 215,

303, 304, 305, 310, and 346) and four cognate courses: (Psychology 201; Psychology or Sociology 310; Physical Education 220; and one unit from Physical Education 221, 380, or 230–243) plus the core requirements designated for professional programs. Students are advised to consult with Mr. Glen Van Anel of the Physical Education and Recreation Department for more information about this program. A model program is as follows:

<i>First year</i>	COURSES
History core	1
Religion core	1
Mathematics core	1
Physical science core	1
Biology 115	1
Sociology 151	1
Psychology 151	1
English 100	1
Religion, history, philosophy, or Interdisciplinary W10, core	1
Physical education core	1/4
 <i>Second year</i>	 COURSES
English core	1
Fine arts core	1
Communication 240	1
Physical education 201	1
Recreation 215	1
Minor elective	1
Psychology 201	1
Physical education 380	1/2
Physical education 221 or one course from 240–243	1/2
Interim elective	1
Physical education core	1/4
 <i>Third year</i>	 COURSES
Philosophy 153	1
Fine arts elective or 2 units of foreign language from 121, 122, 123, 201, 202	1
Recreation 303	1/2
Recreation 304	1
Recreation 305	1
Physical education 220	1
Psychology/Sociology 310	1
Minor	1
Physical education core	1/2
Interim elective	1
 <i>Fourth year</i>	 COURSES
Recreation 310	1
Theology 301	1
Minor	2
Minor or elective	1
Interim elective	1
Recreation 346 (to be taken after all major coursework is completed)	3

Professional combined-curriculum programs

Communication disorders

Students who wish to enter professions dealing with communication disorders, such as speech-language pathology, or audiology may qualify for the degree of Bachelor of Science in Communication Disorders from Calvin College. The advisor 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 include one core course each in history, philosophy, and religion with an additional course from one of these departments; Biology 115 or equivalent course; Physics 223; Mathematics 143; 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 three-quarters course credit in basic physical education.

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

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.

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. Hessel Bouma of the Department of Biology. The following courses are prescribed: Biology 131, 205, 206, 207, 307, and 333; Chemistry 103, 104, 253, 254, and one other; one mathematics course from 161, 131, or 143; 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, or Interdisciplinary W10; two courses in different departments from economics, political science, psychology, and sociology; three courses from art, literature, music, speech, and foreign culture including one from English, American, or world literature (one of these requirements may be fulfilled by two years of high school foreign language); the total of one-half course unit credit from the core courses in speech and three-fourths course unit credit in basic physical education.

Students should apply to accredited schools of medical technology during the fall semester of their junior year. Calvin College is affiliated with the school

of Medical Technology at Butterworth Hospital in Grand Rapids. Students may do their clinical internship at this 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
History 101 or 102	1
Interim	1
Physical education	1/2
Other required courses and electives	2

<i>Second year</i>	COURSES
Biology 206, 207	2
Chemistry 253-254 or 261-262	2
Other required courses	4
Interim	1
Physical education	1/2

<i>Third year</i>	COURSES
Biology 333, 307	2
Chemistry 201, 304, or other chemistry course	1
Other required courses and electives	3-1/2
Physics 223	1
Interim	1

Fourth year
Internship in an accredited school of medical technology.

Occupational Therapy

Preparation for entrance into the field of Occupational Therapy (OT) requires earning a B.S. or M.S. degree in Occupational Therapy, completing a six-month internship, and passing a national board examination. Admission into a B.S.O.T. program requires a minimum of two years of undergraduate college credits including certain specified courses determined by the school offering the degree. Admission into a M.S.O.T. requires a college degree with any major so long as certain specified courses are taken. Admission to either type of program also requires work experience in O.T. which can be arranged through the SVS (Student Volunteer Service) office at Calvin.

Because the specific courses required for admission to occupational therapy are designated by the school offering the degree, the student should obtain a list of these required courses from each school to which they intend to apply. Before registering for classes, a schedule for each student is arranged in consultation with the pre-occupational therapy advisor, Mr. Richard Nyhof of the Biology Department.

Calvin College has entered into a 3-2 combined curriculum program with the Program in Occupational Therapy, Washington University School of Medicine in St. Louis, Missouri. A student participating in this program would spend three years at Calvin College taking the specific courses listed below, and then transfer to Washington University for the two clinical years. Upon successful completion of that program, the student would receive a Bachelor of Science in Letters and Occupational Therapy from Calvin College and a B.S.O.T. from Washington University. Although this program requires five years to complete,

the student would receive a degree from both Calvin College and Washington University. In addition, the student is assured of acceptance into the Washington University program after three years at Calvin if he/she has a GPA (grade point average) at Calvin of 3.0 or higher and has suitable recommendations.

The three-year program at Calvin includes the following requirements:

Art 215 or 151

Biology 131, 205, and 206

Chemistry 113 and 114

Communication Arts and Sciences 100 or 240

Contextual disciplines: four courses

1 course each in History, Philosophy, and Religion and Theology; plus one additional course from this group.

English 100 and one course in literature

Foreign language, through the second year college competency (0-4 semesters) or one foreign culture course

Mathematics 143

Music: one course from 133, 236, 238, or 241

Physical Education: 3/4 course unit credit

Physics 223

Psychology 151, 204, and 212

Sociology and 151 and 217

Preprofessional Transfer Programs

Architecture

Various courses of study may be pursued as preparation for a professional degree in architecture, because of the broad nature of a profession concerned with design, history and culture, and the social and technical sciences. Although Calvin College offers no degree in architecture, a student can focus individual awareness of gifts and abilities within the architectural field by taking a liberal arts undergraduate program in art, art history, business, communications, engineering, history, environmental science, sociology, political science, or other related fields. Any one of these programs, with carefully chosen electives, can prepare the student for entry into a graduate program for the master of architecture as a first professional degree. Four years of high school math is recommended, since at least one course in Calculus and both Physics 221 and 222 are required. A student may also choose to take a typical freshman/sophomore program and transfer into a school of architecture. In either case, the student should plan on six to eight years of formal education followed by an internship. Students interested in such a program should consult with Mr. Charles Young of the Department of Art. A typical freshman/sophomore program would be:

<i>First year</i>	COURSES
Art 231, Art 205	2
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
Physical education	1/2

<i>Second year</i>	COURSES
Art 209, 240	2
Chemistry, if none in high school; biology; or psychology	1
Physics 221, 222	2- 1/2
History, political science or sociology core	1
Literature core	1
Religion and theology core	1
Philosophy 153	1
Communication 100	1/2

Forestry and other natural resource programs.

Natural Resource programs sort out into three main areas: Resource Ecology, Policy and Management, and Resource Institutions and Human Behavior. Because of the great variety of programs and differences in requirements, students interested in any of these areas should contact Mr. Al Bratt of the Biology Department early in their college careers. Because employment opportunities are limited with a Bachelor's degree, graduate work is strongly recommended.

Resource ecology is an area which requires intensive scientific training. A strong background in biology, physical sciences, mathematics, and computer science is required. Persons interested in research careers in fisheries, wildlife, and forestry should plan to complete a biology concentration at Calvin with special attention on the requirements of the graduate school selected.

Resource policy and management is an area which requires less intensive training in the sciences and more emphasis on economic theory, management skills, social sciences, communication skills, and political institutions. Careers in this area include management of resources (forestry, fisheries and wildlife management), planning (landscape architecture), or policy (resource economics, policy, advocacy, education, and communication). Landscape architecture requires courses in design, graphics, engineering, and planning.

Resource institutions and human behavior is an area of study for which preparation in the social and behavioral sciences is appropriate with minimal training in the sciences required. Competence in research methods is required. How individual, group, and institutional behavior affects use and allocation of natural resources is the focus of this area.

There are three main educational paths a student may follow to gain professional competence in these areas:

1. Completion of a Bachelor's degree at Calvin followed by graduate study. This is most appropriate in the area of resource ecology. A major at Calvin should be followed by graduate study.
2. Transfer after two years at Calvin to a professional program elsewhere. This is appropriate in the areas of resource ecology and resource management. Normally students should complete the first two years of the Biology concentration, a year of mathematics, a year of chemistry, and courses in computer science and economics. The remaining courses should be selected with the requirements of the transfer school in mind.
3. Involvement in a combined curriculum program at Calvin for three years followed by two or three years at a school of natural resources. 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 or a second Bachelor's, from the co-operating university. The Calvin degree requires twenty-seven courses at Calvin. The Master's degree may involve research and a thesis, or a Master's project. Admission to the Master's program requires a 3.0 G.P.A. at the time of application and a combined GRE score of at least 1,000.

The field of natural resources is being restructured and many of the traditional programs are being phased out. A more interdisciplinary, problem-solving approach is being taken to manage natural resources. This requires broader training and may appeal to students with interests in fields other than the sciences. Two schools with which Calvin has had a working relationship, Michigan State University and the University of Michigan, are currently revising their curricula. Details of the transfer program with Michigan State University and the combined curriculum program with the University of Michigan are complex and students interested in these programs should see the advisor to plan the details of their college careers.

Students intending to transfer to Michigan State University in the forestry program should take the following courses at Calvin: Biology 113, 131, 232, 233, and 234; Chemistry 113-114; Mathematics 161; Computer Science 141; Physics 221; English 100 and 200; Communication Arts and Sciences 100; Economics 221; Psychology 151; Sociology 151; Philosophy 153; and Religion and Theology 103.

Students interested in the University of Michigan Co-operative program in resource policy and management should take the following courses at Calvin which are prerequisite: Biology 131, 232, 233, 234; Chemistry 113-114; Communication Arts and Sciences 100; English 100; Economics 151; Mathematics 143-132; Psychology 151 or Sociology 151. Students interested in resource ecology or resource policy and management should attend the University of Michigan summer Biological Station at Pellston, Michigan, after their sophomore or junior years at Calvin.

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.

Pharmacy

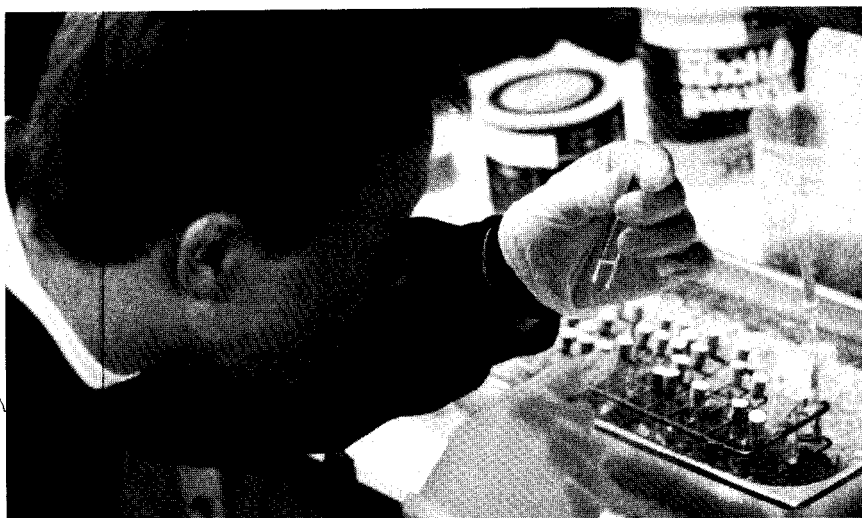
Students wishing to become pharmacists may complete two years at Calvin before transferring to a school of pharmacy for their final three years, culminating in a B.S. degree in pharmacy, or to a graduate school of pharmacy for four years, culminating in a Pharm.D. degree (Doctor of Pharmacy). A pre-pharmacy

program which satisfies admission requirements of the School of Pharmacy at Ferris State University in Big Rapids, Michigan, is given below. Students wishing to transfer to other schools should correspond with those schools and consult the pharmacy advisor, Mr. Ronald Blankespoor of the Department of Chemistry, to determine appropriate programs. Students following normal programs should apply for admission to a school of pharmacy midway through their second year.

<i>First year</i>	COURSES
Biology 131, 232	2
Chemistry 103, 104	2
Mathematics 143 and 132	2
English 100 and either 200 or 235	2
<i>Second year</i>	COURSES
Biology 206, 205	2
Chemistry 261, 262	2
Physics 223	1
Economics 151	1
Political Science 201	1
Psychology 151	1

Physical Therapy

The education and training for entrance into the field of Physical Therapy now requires completion of a master's degree professional program. The preparation for entry into and completion of a graduate program in PT varies from school to school. The following examples will serve to illustrate the various types of programs. A student may be required to complete a minimum of two years of prerequisite courses for acceptance into the program, and following completion of two years in the professional program are awarded a B.S. degree by the graduate institution. Upon completion of one additional year (the third year of the professional program and fifth year overall) the student is awarded an M.S.P.T. (Master's Degree in Physical Therapy). A second type of program accepts students after three years of prerequisite courses and after an additional



three years in the professional program awards the M.S.P.T. degree. A third approach is for a student to complete a degree program at Calvin College with a major in any discipline so long as they have included the specific courses prerequisite to acceptance into a graduate program in Physical Therapy. Following admission to the graduate program, the M.S.P.T. degree will be awarded upon the completion of the three-year professional program.

Because admission to a graduate program in physical therapy is very competitive, students must have a minimum of a 3.0 GPA (grade point average) and substantial work experience in the field of physical therapy. This experience can be obtained through work opportunities arranged through the SVS (Student Volunteer Service) office at Calvin. Students have been placed in hospitals or clinics for work experience under the supervision of a registered Physical Therapist. Since the admission to a graduate program is very competitive, students are frequently advised to pursue a series of courses which will lead to a degree from Calvin in addition to satisfying admission requirements of the PT graduate program.

Each graduate school and program has its own unique set of prerequisite courses (though there are many similarities), therefore a student should obtain a list of requirements for each of the schools to which they plan to apply. A schedule of classes can then be worked out which will include all of the required courses. Students are encouraged to contact the advisor of the pre-physical therapy program, Mr. Richard Nyhof of the Biology department before they register for classes.

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.

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 their relationship to God, to themselves, to fellow human beings, and to the world; and which acknowledge the Lordship of Christ over all.

*A Graduate Bulletin with more detailed information is available from the office of Graduate Studies.

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 65 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

Note: The MACS degree program is being phased out, pending faculty approval. New students will probably not be admitted after 1990.

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. 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 nine-course-unit program with a cumulative average of B (3.0). Such programs normally require eleven or twelve months of full-time study and are worked out with an advisor. Only courses completed with grades of C+ (2.3) or higher may be applied to the degree. Half of the nine course units must be graduate-only courses, including a two-course interdisciplinary sequence on "Christianity, Learning, and Culture", 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.

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 advisor 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 501, 512, 535; Interdisciplinary 561; and Sociology 501) and one must be from approved courses in history or philosophy and education (Education 510, 581; Interdisciplinary 561; 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 theological studies, early childhood education, English, fine arts, history, language arts, learning disabilities, music, reading, school administration, science studies, and social 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 advisor, 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.

Free Course

After completion of six course units, part-time graduate students who have not had the opportunity to take an interim course will be entitled to one free course per graduate degree. Such students should check with the Director of Graduate Studies for academic administration to see if they qualify. This policy is subject to revision when the fee schedule is revised.

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 Veterans Administration will be notified of any student receiving veteran's benefits who has 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 any student receiving veteran's benefits who is 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.

Transfer of Credit

Two course units, or their equivalent, may be transferred to graduate program from accredited institutions, provided the courses are appropriate to the degree program and the grades are B- (2.67 on a scale of 4.0) or higher.

Students seeking a second Calvin College master's degree may use three courses (as approved by the second advisor) from the first master's degree program in the second master's degree program. A master's project for each degree is required.

Post-baccalaureate credit earned more than seven years prior to enrollment in a graduate program may not be credited toward a graduate degree.

Registration

Students must be officially registered for all courses in which they receive credit. Admitted students are to register according to the schedule printed on the Calvin College Schedule of Classes. They will be sent a class schedule and registration information before each term, or upon request. Registration may be completed on campus, or by mail upon request. Those students who expect to sign up for independent study or for a regular course on a tutorial basis must secure formal approval before registration. Request forms are available in the Registrar's Office and the Office of Graduate Studies.

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 advisor and have it signed by this advisor 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.

Post-Baccalaureate Non-Degree Teacher Education Program

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. (See Programs for Teacher Education for requirements.)

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. (See Programs for Teacher Education for requirements.)

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 at the elementary or secondary level. (See Programs for Teacher Education for requirements.)

Post-Baccalaureate Non-Degree Special Education Program Leading to a Michigan Endorsement in Mental Impairment. This program is for those who have a bachelor's degree and a teacher certificate and who wish to obtain an endorsement in mental impairment. (See Programs for Teacher Education for requirements.)

Post-Baccalaureate Non-Degree Teacher Education Program Leading to a Michigan Endorsement in Early Childhood Education. This program is for those who have a bachelor's degree and a valid teacher certificate and who wish to obtain an endorsement in Early Childhood Education. (See Programs for Teacher Education for 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. Interim courses numbered W10 through W49 have no prerequisites; those numbered W50 through W99 have either prerequisites or other conditions. (A catalog of interim courses is published separately.) 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

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 periodization. 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.*

213 Teaching Science in the Elementary School. F and S, half course. The consideration of methods and materials and various teaching strategies for aiding the classroom teacher to teach science effectively in elementary school. Consideration of the relationship of Christian faith to the teaching of science in the classroom. Examination of various textbooks and supplementary materials for teaching science, with consideration of criteria for evaluation of those curricular materials. Includes laboratory activities. Prerequisites: Physics 111 or Chemistry 110 and a biological science core. Completion of or concurrent enrollment in Education 301 is recommended. *Staff.*

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 the Judeo-Christian tradition, will be examined. Satisfies as a *third* core course in religion and theology. *Mr. J. Primus, Mr. W. Smit.*

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.

250 **Meteorology.** I, even-numbered years. Meteorology is the science that deals with the atmosphere, weather, climate, and weather forecasting. This course deals with the first three of these aspects of meteorology. Major components include: 1) consideration of the weather conditions that make up climate: temperature, solar radiation, clouds, precipitation, air pressure, and winds; 2) study of natural factors that influence weather conditions: altitude, latitude, and proximity to bodies of water and to mountains; and 3) description of climate with respect to the Earth as a whole, North America, and the Great Lakes Region. Some time is devoted to consideration of man's impact on climate through atmospheric pollution, and to the impact of climate on human civilization. Lecture, discussion, activities in observation and in weather map reading. Prerequisite: Geography 100 or high school chemistry or equivalent. *Mr. R. Blankespoor.*

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 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. *Ms. E. Greenway.*

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 fel-

lows 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.** S, 1990. 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. *Staff.*

562 **Christianity, Learning, and Culture II.** F, 1989. 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. *Staff.*

594 **Thesis Prospectus.** S. A course for reading, preliminary research, and writing, preparing students for 595. Supervised by the designated thesis advisor. 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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

- W10 **Christian Perspectives on Learning** (core). *Staff.*
- W11 **Folklore of Many Lands.** *Mr. C. Hege-wald*
- W12 **Mission and Service in Haiti.** Off campus. *Mr. J. Bradley, Mr. R. Van An-del.*
- W13 **Classical Arts in Italy.** Off campus. *Mr. E. Boexé, Ms. E. Boexé.*
- W14 **Japanese Films/Japanese Society.** *Mr. L. Herzberg.*
- W15 **An Israel Interim: Biblical and Poli-tical Perspectives.** Off campus. *Mr. P. De-Boer.*
- W16 **Saludos: A Cultural Experience in Central America.** Off campus. *Ms. H. Bon-zelaar.*
- W17 **Death and the Meaning of Life.** *Mr. K.J. Clark.*
- W18 **Christian Living.** *Mr. W. Joosse.*
- W19 **Playing the Inner Game.** *Ms. C. Baker.*
- W20 **Five Hundred Years after Colum-bus: Central America Today.** *Mr. R. Hoks-bergen.*
- W21 **Leadership and Management in the Christian Organization.** *Mr. R. Karppinen.*
- W22 **Christian Perspectives on Work and Vocation.** *Mr. S. Simpson, Mr. G. Van An-del.*
- W23 **Introduction to Computers for the Humanities.** *Mr. R. Wevers.*
- W24 **. . . and a Time to Dance.** *Ms. E. Van't Hof.*
- W50 **Interdisciplinary Problem Solving.** Partially off campus. *Mr. J. Dodge, Mr. M. Vander Wal.*
- W51 **Urban Education: Exploring Suc-cessful Programs in Chicago.** Off campus. *Mr. C. Mulder.*
- W52 **Back to the U.S.S.R.: Understanding Comtemporary Soviet Culture as a Force in Diplomacy.** Off campus. *Ms. A. Greid-anus-Probes.*
- W53 **Worldviews on Review.** *Mr. G. Spyk-man.*
- W54 **Computer Fervor: Information Tech-nology in Human Affairs.** *Mr. K. Kon-yndyk, Mr. K. Peterson.*
- W55 **Philosophy of Nature and Technol-ogy.** *Mr. L. Van Poolen.*
- W56 **HEART (Hunger Elimination Ac-tion and Resources Training) Program.** Off campus. *Mr. H. Hoeks.*

Academic support

S. Timmermans (director), E. Anker, A. Emerson, J. Heerspink (tutor coordinator), B. Morrison, C. Van Eerden

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 precollege 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 who enroll in non-credit courses as a condition of admission or probation are generally eligible for a fifth year of financial aid if an additional amount of time becomes necessary to complete a degree program. Non-credit courses appear on student transcripts with grades which do not carry honor points. However, failure to complete a prescribed ASP course with a passing grade may make a conditional

or probational student subject to dismissal. Students normally register for three credit courses in addition to the required non-credit units for a total of not more than four and one-quarter course units.

ASP courses are open to all students. Freshman students admitted on condition are required to successfully complete ASP 006 and an English and / or mathematics review course in their first semester at Calvin if their performance on required placement tests indicates the need. Freshman and sophomore students returning on probation are also normally required to participate in the Academic Support Program. ASP instructors provide academic counseling, course advising, and diagnostic testing for students enrolled in ASP courses or participating in ASP services. Other students can obtain any of these services or information about review courses upon request at the ASP office.

003 Review of Written English as Second Language. F and S, no 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 course on the basis of scores on the locally administered placement test test of English Language Proficiency, which is administered again at the end of the course. Enrollment in English 100 the following semester will require a minimum score of 85 on the locally administered placement test and the recommendation of the ASP 003 instructor and the English Department. *Ms. C. Ling*

004 Precollege Mathematics for the Liberal Arts Student. F and S, no 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 ASP005, Mathematics 100, Mathematics 221, Economics 151, Astronomy 110, Biology 111, Chemistry 110, Physical Science 110, and other core courses. *Mr. A. Emerson, Ms. C. Van Erden.*

005 Precollege Mathematics for the Business and Science Student. F and S, no

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 problemsolving skills and mathematical reasoning. The course is intended as preparation for Mathematics 143, 132, or 110 for students in mathematics-oriented majors whose preparation in mathematics is inadequate. *Mr. A. Emerson.*

006 Methods and Motivation for College Study. F and S, no credit, half course. This course presents methods of classroom and textbook study strategies for college course work and considers problems of self-motivation and self-discipline, with reference both to principles of the Christian faith and to resources within the college community. Concurrent registration in a reading and lecture course such as a history, political science, psychology, or sociology course is required for successful completion of this course. *Ms. E. Anker, Ms. J. Heerspink, Mr. S. Timmermons.*

007 Precollege Grammar and Composition. F and S, no credit, half course. This course provides instruction in grammar and writing and is intended as preparation for English 100 which must be taken the subsequent semester. Students who are required to take this course in order to be admitted to English 100 must pass it with a grade of C or higher. *Ms. B. Morrison.*

Art

Professors E. Boeë (chair), H. Bonzelaar, C. Huisman, R. Jensen, C. S. Overvoorde
Associate Professors J. Mellick, F. Speyers, C. Young
Assistant Professor A. Greidanus-Probes
Instructor C. Vermeulen

CALVIN'S ART OFFERINGS are within the framework of the liberal arts tradition. Four distinct programs of concentration are provided. Majors in studio art, art history, and art education lead to the Bachelors of Arts degree; a major earning the Bachelor of Fine Arts degree is also available. In addition the department offers minors in studio art, art education, and art history. Students must have earned a grade of at least C (2.0) in 205 before applying for admission to any concentration.

The ten-course major program in studio art is 205, 209, 210, 231, 232; 310 or 311; one from 320, 325, 350, or 360; and three intermediate or advanced studio courses. All studio art majors are required to participate in the senior exhibition during the spring semester of their senior year.

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

The ten-and-a-half-course art education major for teachers, k-12, must include 205, 209, 215, 216, 231, 232, 310 or 311, 320 or 325, and 210 or 240. It is recommended that one of two remaining electives be an intermediate level media class. A second elective may be any art class except 151. The seven-course secondary teacher education minor is 205, 209, 215, 216, 231, 232, and one studio course from 310, 311, 320, 325, or 350. The elementary teacher education minor is 205, 209, 215, 231, 232, one course from 310, 311, 320 or 325, and one elective, which may be Philosophy 208. All art education majors 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 advisor for this program are Ms. Helen Bonzelaar and Ms. Anna G. Probes.

The Bachelor of Fine Arts (B.F.A.) program, which has a greater professional emphasis, is described on pages 71-72. This program is not a preparation for teacher certification. The program advisor is Mr. Carl Huisman.

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

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.

ART EDUCATION COURSES

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 which man has produced illustrates the role of art over the ages. The course includes lectures, demonstrations, and art teaching experiences in the school. Research paper required. Open to freshman students only by permission of the instructor. *Ms. H. Bonzelaar.*

216 Principles of Secondary Art Education. F. The course focuses on the philosophy and curriculum of art in education and on methods of teaching art in the secondary school. An exploration of media selected from enameling, jewelry-making, weaving, and batik. Prerequisites: 205 and 209. *Ms. H. Bonzelaar.*

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. Prerequisite: 205 or permission of the instructor. Materials fee. *Staff.*

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 or permission of the instructor. *Mr. R. Jensen.*

309 Advanced Drawing.* F and S, tutorial. 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 and permission of the instructor. *Mr. C. Huisman, Mr. R. Jensen, Mr. C. S. Overvoorde, Ms. A. G.-Probes, Mr. F. Speyers.*

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. Projects and assigned readings. Materials fee. Prerequisite: 209 or permission of the instructor. *Mr. J. Mellick.*

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 or permission of the instructor. *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 also study twentieth-century sculpture as it relates to their own productions. Materials fee. Prerequisite: 310 or permission of the instructor. *Mr. J. Mellick.*

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. *Mr. J. Mellick.*

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. An historical or technical paper is required. Materials fee. Prerequisite: 313. *Mr. C. Huisman.*

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

321 Intermediate Printmaking.* F and S. 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 and S. 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 or permission of the instructor. *Mr. C. S. Overvoorde.*

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. *Mr. C. S. Overvoorde.*

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. *Mr. C. S. Overvoorde.*

350 Visual Communications I — Graphic Design. Introduces graphic design as a problem-solving approach to visual communication. Emphasis on learning the process of conveying visual information with meaning and purpose. Typography, illustration, and photography are utilized to develop visual problem-solving methodologies which stimulate creativity and innovation. Sequentially selected projects are designed to develop visual vocabulary and encourage innate creative potential. Prerequisite: Art 205 or permission of instructor.

351 Visual Communications II — Publication Design. Investigates the leading edge of modern publishing: How to effectively communicate linear print information into a largely visually oriented society. Design principles and procedures are carefully formulated to demonstrate the synergistic integration of art and typography. Experimentation and personal style are encouraged. Studio projects include magazine formula and format, direct mail, 3-D point of purchase packaging, book jacket design, corporate identity and space advertisements. Prerequisite: Art 350.

352 Visual Communications III — Advertising Design. Interweaves Marshall McLuhan's time honored principles of visual communication with hands-on advertising practices of today. Essential elements of

Gestalt perception, sequential storyboarding and visual resonance are integrated to reach specific market audiences with real life simulations of applicable solutions. Emphasis will be on personal development of technical and creative skills utilizing photography, layout design, illustration, computer graphics and video. Prerequisite Art 351.

359 Seminar in Principles and Practices in Art Teaching. S. A course in perspectives on, principles of, and practices in the teaching of art on the elementary and secondary level. This course should be taken concurrently with Education 349: Directed Teaching. Before taking Art 359, students must be admitted into Directed Teaching by the Art and Education departments. Prerequisites: art education major. *Staff.*

360 Introduction to Photography.* F and S. 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 and S. 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 and S. 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 have an introductory course in the medium and submit a written proposal to the chair for approval. *Staff.*

395 Seminar and Exhibition.* F and 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,

writing 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. One unit taken over both semesters. Prerequisite: senior status and a concentration in art. *Mr. C. Young.*

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

- 350 **Introduction to Graphics.**
- 351 **Intermediate Graphics.**
- 352 **Advanced Graphics.**
- 360 **Introduction to Photography.**
- 361 **Intermediate Photography.**
- 362 **Advanced 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, sculpture, and architecture from the fourteenth century 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.* Not offered 1990-91.

235 Renaissance Art.* F, 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. *Mr. C. Young.*

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 is 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. *Mr. C. S. Overvoorde.* Not offered 1990-91.

237 Baroque Art History.* S. 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 is addressed. Bernini, Caravaggio, Rubens, Velasquez, Rembrandt, Poussin, Watteau, Chardin, Reynolds, and Wren are among the major figures studied. A research paper is required. *Mr. C. Young.*

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.* Not offered 1990-91.

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 van der Rohe, and Saarinen. *Mr. E. Boevé.*

241 Oriental Art.* F, 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. *Mr. E. Boevé.*

The following classics course may be included in art concentrations:

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

380 Internship in Visual Communications. A practicum in which students work ten hours per week for one semester under an employer supervisor and participate in a series of internship seminars. Students apply theoretical, ethical, and technical aspects of their college education to specific visual communication situations normally in graphic design or photography. Personal journals, assigned art projects, and seminar participation are required. Prerequisite: permission of the department.

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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 Ceramics: An Experience in Clay for the Non-Art Major. *Mr. C. Huisman.*

W50 Photographers Working in New York City. Off campus. *Mr. R. Jensen.*

W51 Ethics, the Art Market, and the Honest Product. *Mr. J. Mellick.*

W52 The Modern Artist: From Prophetic Eyewitness to Public Entertainer. *Mr. F. Speyers.*

IDIS W13 Classical Arts in Italy. Off campus. *Mr. E. Boexé, Ms. E. Boexé.*

IDIS W16 Saludos: A Cultural Experience in Central America. Off campus. *Ms. H. Bonzelaar.*

IDIS W52 Back to the U.S.S.R.: Understanding Contemporary Soviet Culture as a Force in Diplomacy. Off campus. *Ms. A. Greidanus-Probes.*

Astronomy

Professor H. Van Till, (chair, Department of Physics)

STUDENTS INTERESTED in graduate work in astronomy should major in physics and should plan their program with the chair 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 uni-

verse, a description of cosmological models, and a discussion of possible Christian responses to them. Laboratory. *Staff.*

201 Contemporary Astronomy. F, alternate years, 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 111. Not offered 1990–91.

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

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W50 **Creation and the Big Bang.** *Mr. H. Van Till.*

Biochemistry

SEE THE DEPARTMENT OF CHEMISTRY, pp. 108–112, for a description of the biochemistry major and specific biochemistry courses.

Biology

*Professors J. Beebe, H. Bouma, A. Bratt, D. De Heer, A. Gebben, B. Klooster (chair), P. Tigchelaar, **R. Van Dragt, G. Van Harn, *U. Zylstra*
*Associate Professors A. Koop, R. Nyhof, S. Stegink, **R. Van Dragt*

THE DEPARTMENT SERVES a number of functions—it provides several different courses which meet the college core requirement in natural science; it provides courses in several preprofessional programs; and it provides programs of concentration in areas of cell and molecular biology, organism biology, and environmental biology. A seminar program acquaints students with professionals working in a variety of areas in biology.

Students interested in a biology program of concentration with a particular emphasis should consult with appropriate advisors. A partial listing of staff interest areas includes: Mr. Beebe—plant molecular biology, plant development, and plant physiology; Mr. Bouma—animal cell and molecular biology, and human genetics; Mr. Bratt—entomology, animal diversity, marine biology, and environmental biology; Mr. De Heer—animal cell and molecular biology, and immunology; Mr. Gebben—plant ecology, plant taxonomy, and plant diversity; Ms. Klooster—microbiology, microbial genetics, and animal nutrition; Mr. Nyhof—animal physiology and pharmacology; Mr. Stegink—plant physiology and science education; Mr. Koop—genetics, molecular genetics, and animal

development; Mr. Tigchelaar—animal anatomy and neuro-anatomy and physiology; Mr. Van Dragt—animal ecology, animal behavior, and evolutionary biology; Mr. Zylstra—cell biology and electron microscopy. Consult pages 67–86 for professional and preprofessional programs related to biology.

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 and one-half course units including 131, 232 (or 205–206), 233, 234, at least one investigative course, three additional 300-level courses (of which one may be an approved advanced interim course in biology), and 395 or 396. The student must also enroll in Biology 295 twice during the junior and senior years. If 205–206 are included, 323 and 331 may not be included. Only one microbiology course may be counted in a program of concentration. Normally 131 and 232 are completed the first year, 233 and 234 the second year, and the 300-level courses during the third and fourth years. Biology 341 and 346 are offered in alternate years.

Required cognates include either one year of physics (221–222 or 126 and 225) or one year of mathematics (143, 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 and 152 or 313). Chemistry courses should be completed by the end of the second year of the program. 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. Other environmental courses in biology, geology, and natural resources which are offered at the AuSable Institute of Environmental Studies in Mancelona, Michigan, are described in the Off-Campus Programs section, page 176.

The Biology Department Honors Program requires that in satisfying the college honors program (page 000) the student must complete three courses in biology with honors and submit an honors thesis. One of these courses will normally be the honors section of Biology 131. The second honors course will be taken from those courses numbered 300–349 the details of which will be worked out by the student and instructor at the time the student registers for the course. The third course requirement is the completion of an independent research project Biology 390 with honors. Normally this will be an investigative research project written in the form of a scientific research paper.

Prospective secondary teachers should complete Biology 357 as part of the normal program of concentration. A minor in physical science is recommended and may be constituted of the cognates plus Geology 313.

A secondary education teaching minor in biology consists of six course units of which 131, 232, 233, 234, and 357 are required.

Directed teaching in biology is available only during the spring semester. The advisor for biology teaching major and minor programs and for the MAT programs in science studies is Mr. Steven Stegink. The elementary teacher education minor is 111 or 131, 114 or 233, 115 or 232, 116 or 234, and two approved interim or semester courses.

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 medical school or

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 chairs of the departments involved must approve each program.

The core requirement in biology is met normally by 111, 114, 115, or 116. In some cases 131 may be appropriate.

GENERAL COLLEGE COURSES

111 Biological Science. F and S, core. 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.*

114 Plant Science. S, core. 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, and plant propagation. Representatives of the major crop groups in world agriculture are surveyed. Lectures and laboratories. Prerequisites: none, but Mathematics 100 and Physics 110 or equivalents are recommended. *Mr. J. Beebe.*

115 Human Biology. F and S, core. 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. Prerequisites: none, but Mathematics 100 and Physical Science 110 or equivalents are recommended. *Staff.*

116 Field Biology. F, core. The study of organisms in their natural environment. Emphasis 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:

none, but Mathematics 100 and Physics 110 or equivalents are recommended. *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. *Mr. P. Tigchelaar.*

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: 205 or 232, 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. *Ms. B. Klooster.*

307 Microbiology of Infectious Diseases. F. A study of infectious diseases of human beings, including the biology of the microorganisms and methods of isolation and identification. This course consists of two three-hour lecture-laboratory periods per week. Only one microbiology course, either 307 or 336, can be included as part of a biology program of concentration. Prerequisites: One course in microbiology with lab. *Ms. B. Klooster.*

311S Field Botany. Summer only. 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 Au

Sable Trails Institute of Environmental Studies located near Mancelona, Michigan. Prerequisite: 114, 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 and S. 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 molecular genetics. The laboratory consists of basic techniques in cell and molecular biology plus some exercises in genetics. *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. Lectures and laboratory. 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: 232 and 233, Chemistry 113 or 104. *Staff.*

295 **Biology Seminar.** F and S. No credit. Various topics in biology and related disciplines are presented by visiting speakers, faculty, and students. During the junior and senior year, majors must attend two of the four semesters; freshman and sophomore students are encouraged to attend. *Mr. R. Van Dragt*

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: 232 and Chemistry 114, 253, or 261. *Mr. A. Koop.*

323 **Comparative Vertebrate Anatomy.*** F. A comparative study of vertebrate structure and of the functional significance of these structural variations. Credit cannot be applied toward a biology major for both 205 and 323. Lectures and laboratory. Prerequisite: 232. *Mr. P. Tigchelaar.*

324 **Molecular Biology.*** S. A study of photosynthesis, biosynthesis of macromolecular precursors, the chemistry of the storage, transmission and expression of genetic information, biochemical dimensions of selected physiological processes, and philosophical and ethical issues related to biochemistry and molecular biology. (Also listed as Chemistry 324, Biochemistry.) Lectures and laboratory. Prerequisite: Chemistry 323. *Mr. L. Louters.*

331 **Comparative Animal Physiology.*** S. A study of animal physiology using a cellular and comparative approach. Topics include membrane transport, nerve function, sensory mechanisms, muscle contraction, hormone action, ion and osmotic regulation, temperature relations, metabolism and circulation. Lectures and laboratory. Prerequisite: 232 or 205; Chemistry 114, 253, or 261. *Mr. R. Nyhof.*

333 **Immunology and Hematology.*** S. A study of immunology and hematology including innate, cellular, and humoral immunity, blood composition, hemostasis, coagulation, complement, immunogenetics, the major histocompatibility complex, immunoregulation, and abnormalities of the immune and hematologic systems. Lectures and laboratory. Prerequisites: Biology 206 or 232, and Chemistry 114, 253, or 261. *Mr. D. De Heer.*

336 **General Microbiology.*** F. A study of the structure and function of microorganisms, including a consideration of their role in food production and spoilage, biogeochemical cycles and environmental quality, and as tools in genetic engineering. Lectures and laboratory. Prerequisites: 206, 232, or 233; Chemistry 114, 253, or 261. Ms. B. Klooster.

341 **Entomology.*** F. Study of the biology of insects with emphasis on systematics. Lectures, laboratory, and field trips. Prerequisite: 234. Mr. A. Bratt. Not offered 1992-93.

346 **Plant Taxonomy.*** F. Identification, nomenclature, and classification of vascular plants. Lectures, laboratories, and field trips. Prerequisite: 234. Mr. A. Gebben. Not offered 1991-92.

Investigative Courses

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

352 **Investigations 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 is emphasized. Topics include temperature regulation, energy exchange, water balance, and circadian rhythms. Prerequisites: 234 and 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: 232 and 233, Chemistry 114, 253 or 261. Mr. H. Bouma, Mr. D. De Heer, Mr. U. Zylstra.

354 **Investigations in Molecular Genetics.*** F. Laboratory studies involving the cloning and characterizing of DNA fragments isolated from various sources. The initial work will involve the insertion of a defined promoter into a plasmid expression vector. This promoter will be cloned in front of an easily identified gene in such a way that the gene will be expressed in an appropriate bacterial host. An individual student project involving the manipulation of DNA segments is required. This project

will result in a written paper and a poster presentation. Prerequisites: Biology 232 and Chemistry 114, 253, or 261. Mr. A. Koop.

357 **Teaching Investigations in Biology.*** F. 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 will be involved in the observation, preparation, writing, and teaching of laboratory exercises. Prerequisites: 234 or permission of the instructor. Mr. S. Stegink.

359 **Seminar in Secondary Teaching of Biology.** S. A course in perspectives on, principles of, and practices in the teaching of biology on the secondary level. This course should be taken concurrently with Education 349. The seminar provides a forum for the discussion of concerns that develop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in biology. Staff.

Seminar and Research Courses

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

395 **Biological Perspectives*.** F, half course unit. This course examines ways in which biology has developed through the methodologies of the various subdisciplines, inherent limitations of the scientific enterprise, alternative philosophic viewpoints held by contemporary biologists, and various types of biological literature. Lectures and discussions. Prerequisite: senior status in the biology program of concentration. Mr. R. Van Dragt.

396 **Perspectives in Medical Science*.** S, half course unit. A critical study of the historical and philosophical perspectives pertaining to the science and practice of medicine with particular emphasis on the methodology and results of medical research. Included is a study of the medical literature; and a critical analysis of selected representative ethical issues in medicine. Prerequisite: senior status in biology program of concentration or permission of the instructor. Mr. H. Booma.

GRADUATE COURSES

510 **Basic Ideas in Contemporary Biology.** Summer only. A study of contemporary ideas in biology and how they contribute to an understanding of the nature of living things. Activities will focus on methods of inquiry and experiments which are appropriate for elementary and middle school classrooms. Pre-service and in-service teachers can benefit from this course and become confident and excited about teaching life science. Prerequisite: 111 or equivalent. *Staff.* Offered Summer 1992. (Last scheduled offering.)

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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W50 **Tropical Marine Biology.** Off campus. *Mr. A. Bratt.*

W51 **Flora and Fauna in the Classroom.** *Mr. J. Beebe, Mr. R. Van Dragt.*

W52 **From Bloodstains to Tissue Typing: The Science of Personal Identification.** *Mr. D. DeHeer.*

W53 **The Biology of Health.** *Mr. P. Tigchelaar.*

W54 **Electron Microscopy Techniques.** *Mr. U. Zylstra.*

W55 **Investigations in Organelle Biochemistry.** *Mr. S. Stegink.*

Courses offered at the AuSable Institute of Environmental Studies:

ASI 340 **Winter Stream Ecology.** *Mr. D. Mahan.*

ASI 350 **Environmental Ethics.** *Ms. S. Bratton.*

ASI 210 **Winter Recreation** (quarter course). *Mr. R. Barr.*

ASI 212 **Winter Orienteering** (quarter course). *Mr. R. Barr.*

ASI 310 **Winter Biology.** *Ms. C. Newhouse.*

Business

THE BUSINESS ADMINISTRATION PROGRAM AT CALVIN COLLEGE is intended to prepare students for careers in business by balancing its business courses with the college's strong liberal arts core curriculum. Preparation for a business career is provided by meeting the general degree requirements and the business concentration in the Department of Economics and Business. This program requires a minimum of fourteen courses—the equivalent of forty-nine semester hours in business, economics, and related mathematics and computer science courses. Students may choose the general business program or may select an emphasis area from among several business functions such as marketing, management or finance. A full description of business major and cognate requirements is found

on pages 125–126. Any of these concentrations, along with the general graduation requirements acquaints students with the functions of the business firm and provides an understanding of the environment of business and human behavior, as well as an opportunity to develop one's personal Christian commitment and ethical sensitivity. After completion of the program students are prepared for entry-level positions in a variety of business occupations as well as for graduate study in business.

See the Department of Economics and Business for descriptions of course offerings.

Chemistry

*Professors R. Blankespoor, R. De Kock, A. Leegwater (chair), †L. Louters, K. Piers, W. Van Doorne
Associate Professor T. Gray
Assistant Professors K. Carlson Muyskens, M. Muyskens*

THE DEPARTMENT OFFERS programs of concentration for students interested in continuing their studies in graduate school, for those interested in a career as a chemist or biochemist in private industry, and for those interested in teaching chemistry at the secondary school level. The requirements of these programs are described below.

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, 201, 261, 262, 317 or 304, 396, and two courses chosen from 318, 323, 326, 329, 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, 395, 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, French, or Russian is recommended. Computer Science 141 or 151 is recommended.

For students preparing for graduate study in biochemistry, the department offers a biochemistry major. The requirements for the biochemistry major program are 103, 104, 201, 261–262, 317, 318, 323, 324, 396. Required cognates are Mathematics 161, 162; a year of college physics; Biology 131 and two biology courses chosen from 232, 233, 321, 336, 353, or 354, one of which must be a 300-level course. A reading knowledge of German, French, or Russian is 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, 330, Interdisciplinary 210, or an approved interim course. The teaching minor is 103, 104, 253–254 or 261–262, 304 or 317, 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 chairs of the two departments. Recommended courses include Chemistry 201, 304 or 317, 396, Physics 280 and 382.

Students planning secondary majors or minors in chemistry should consult the department chair and Mr. Steven Stegink of the Biology Department. 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, 262, 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. At least two 300-level courses in one discipline must be included in the ten-course component of this group. The chairs of the three departments involved must approve each program of this type.

The physical science core may be met by 110.

Honors Program. The Department of Chemistry sponsors an honors program to supplement the formal course offerings in the department's degree programs, increase both the breadth and depth of the student's knowledge of modern chemistry, and lead to an honors degree in chemistry upon graduation. The program offers guided study in chemistry through tutorials, independent research, and seminars.

The requirements for graduation with honors in chemistry are: (1) at least a 3.3 cumulative grade point average; (2) at least a 3.0 cumulative grade point average in courses in the major; (3) completion of the ACS certified major (or, the completion of the biochemistry major plus one additional course from 325, 326, 329, or 330); (4) successful completion of at least 2.0 units of 395; (5) completion of at least four additional honors courses within or outside the Department of Chemistry; (6) approval by the Chemistry Department (or a committee thereof) of an honors research thesis supervised and approved by a member of the chemistry faculty. The thesis may be of laboratory or theoretical nature, and must be submitted no later than six weeks before the end of the student's final semester of undergraduate work; (7) a public oral presentation of their research during the spring semester of the senior year. Juniors or seniors in the honors program may, subject to the approval of the department chair, register for a fifth course, which may be graded on the basis of satisfactory or unsatisfactory.

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. W. Van Doorne.*

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. W. Van Doorne.*

103 General Chemistry. F. A study of the basic principles of chemistry, with emphasis on the laws of chemical combination, descriptive inorganic chemistry, thermochemistry, the gas, liquid, and solid states of matter, the periodic law, atomic structure and chemical bonding, and the physical properties of aqueous solutions. 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 kinetics, chemical equilibria involving gases, weak acids and bases, and slightly soluble solids, free energy changes, electrochemistry, transition metal chemistry, descriptive chemistry, 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 major and the elementary education student. The course explores the role of chemistry and its resulting technologies in contemporary society. It emphasizes the nature of scientific investigation, some historical developments in chemical theory, chemical periodicity and reactivity, and our daily interaction with synthetic materials and chemicals. Laboratory. Prerequisite: Mathematics 100 or 221 or the equivalent, or passing the mathematics competency test. *Staff.*

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, acid/base theory, and periodicity. Laboratory. Prerequisite: one year of high school chemistry or permission of the department. *Mr. R. Blankespoor.*

114 Introduction to Organic and Biochemistry. S, core. A study of the fundamental classes of organic compounds, their syntheses and reactions, followed by an introduction to several biochemical topics including carbohydrates, lipids, proteins, enzymes, and nucleic acids. Laboratory. Prerequisite: 113. *Mr. R. Blankespoor.*

201 Quantitative Analysis. F. A study of the theory and practice of commonly used chemical analytical techniques. Lecture material includes: the choice of analytical method, statistics and evaluation of analytical data, theory of simple and complex equilibria; theory of acid-base, precipitation, redox, and complexation reactions; titration curves; electrochemistry and cell potentials; and photometric 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, including a study of the structure and chemistry of biochemical macromolecules and intermediate metabolism. Laboratory. Prerequisite: 253. *Mr. A. Koop.*

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. Prerequisite: 104. *Mr. K. Piers.*

262 Organic Chemistry. S. A continuation of 261. Laboratory. Prerequisite: 261. *Mr. K. Piers.*

295 Chemistry Seminar. F and S, no credit. A seminar devoted to an exploration of topics in current chemical research in both academic and industrial laboratories. Junior and senior chemistry majors must

attend each semester; freshmen and sophomores intending to major in chemistry are encouraged to attend. *Mr. M. Muyskens.*

304 Physical Chemistry for the Biological Sciences. S. A survey of physical chemistry with emphasis on the laws of thermodynamics, physical equilibria, transport phenomena, and enzyme kinetics. Topics are treated with life science applications. A one-semester college level calculus course is recommended but not required. Laboratory. Prerequisite: 104. *Mr. R. De Kock.*

317 Physical Chemistry. F. A study of macroscopic properties of matter as described by chemical thermodynamics and kinetics. Topics include: the laws of thermodynamics and their application to pure substances, chemical reactions, and solutions; a brief view of the molecular interpretation of bulk properties (statistical thermodynamics); kinetic molecular theory and transport phenomena; and reaction kinetics. Laboratory. Prerequisites: 104, Mathematics 162, and a college physics course. *Mr. M. Muyskens.*

318 Physical Chemistry. S. A study of the microscopic description of matter and its dynamic processes as described by quantum mechanics, statistical mechanics and molecular dynamics. Topics include: the structure, energy, and spectroscopy of atoms and molecules given by quantum theory; the relationship between microscopic and macroscopic properties of matter (statistical mechanics); and a detailed understanding of chemical reactions given by molecular dynamics. Laboratory includes a six-week project on a topic proposed by the instructor. Prerequisite: 317. *Mr. M. Muyskens.*

323 Biochemistry.* F. A study of proteins, carbohydrates, lipids, enzymes, coenzymes, hormones, vitamins, metabolism, biosynthesis, and bioenergetics. Prerequisite: 254 or 262. *Mr. T. Gray.*

324 Biochemistry. S. A continuation of 323. Topics covered are photosynthesis, biosynthesis of macromolecular precursors, the chemistry of the storage, transmission and expression of genetic information, biochemical dimensions of selected physiological processes, and philosophical and ethical issues related to biochemistry. Also listed as Biology 324. Laboratory. Prerequisite: 323. *Mr. T. Gray.*

325 Advanced Organic Chemistry.* F. A study of selected topics in organic synthe-

sis or physical organic chemistry. In the laboratory individual projects involving multi-step syntheses are carried out based upon procedures found in the literature. All compounds prepared are fully characterized using spectroscopic methods and other instrumental techniques. Prerequisites: 262 and 317. Offered alternate years. *Mr. K. Piers.*

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. 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. *Ms. K. Muyskens.*

330 Advanced Inorganic Chemistry.* S. A study in the chemistry of metals and non-metals with emphasis on symmetry, structure-property correlations, and periodicity. Types of compounds discussed are ionic solids, cluster and cage compounds, and organometallics. For coordination compounds the stereochemistry, reaction mechanisms, spectra, and magnetism are treated in detail. Laboratory. Prerequisite: 317 or 304, or concurrent registration in 304. *Mr. W. Van Doorne.*

359 Seminary in Secondary Teaching of Chemistry. S. A course in perspectives on, principles of, and practices in the teaching of Chemistry on the secondary level. This course should be taken concurrently with Education 349. The seminar provides a forum for the discussion of concerns that develop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in Chemistry. *Staff.*

390 **Independent Study.** F, I, S. Directed readings or projects. Admission by permission of the chair 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 chair 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. *Staff.*

OFF-CAMPUS OFFERING

332 **Environmental Chemistry.** Principles and analysis of chemical movement and distribution in natural environments. Sam-

pling and analytical methods are included for water, soil, and air. Work conducted both in natural habitats and the laboratory. Prerequisites: one year of general chemistry and one semester of either biochemistry or organic chemistry. Offered in conjunction with the Au Sable Institute. See page 157.

GRADUATE COURSES

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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W50 **Exploring Genes: Analyzing, Constructing, and Cloning DNA.** *Mr. T. Gray.*

W51 **What Are We Doing to Our Environment.** *Mr. R. Blankespoor, Mr. K. Piers.*

Chinese language and literature

Assistant Professor L. Herzberg, (B. Carvill, chair, Department of Germanic Languages)

A MINOR IN CHINESE LANGUAGE AND LITERATURE consists of seven courses: 101, 102, 201, 202, 215, and two literature courses. A Chinese study group minor consists of seven courses: Chinese 101, 102, 201, and 202, plus any three courses from Art 241, History 203, History 204, Political Science 205, and approved interim courses.

101 **Elementary Chinese.** F. An introduction to the Chinese language, with emphasis mainly on spoken Chinese (Mandarin). *Mr. L. Herzberg.*

102 **Elementary Chinese.** S. Continuation of 101, with significant attention given to the written language as well as further development of the oral skills. *Mr. L. Herzberg.*

201 **Intermediate Chinese.** F. Completion of the study of basic Chinese grammar and continued study of the Chinese writing system, with equal emphasis on speaking and reading the language. *Mr. L. Herzberg.*

202 **Intermediate Chinese.** S. Continuation of Chinese 201, with grammar review and further study of Chinese characters. *Mr. L. Herzberg.*

215 Intermediate Conversation and Composition. Continued study of Chinese characters through the reading of excerpts from early twentieth century literature. Oral drills, discussions in Chinese, and compositions based on the readings. Prerequisite: 202. *Mr. L. Herzberg.*

216 Advanced Conversation and Composition. Continuation of 215, using stories and essays from the People's Republic as the basis for compositions and conversation. Emphasis in spoken Chinese is on Communist terms and current colloquialisms; emphasis in written Chinese is on simplified characters. Prerequisite: 215. *Mr. L. Herzberg.*

217 Introduction to Early Twentieth-Century Chinese Literature. An introduction to the great writers of the 1920s and 1930s through a study of their short stories, read in the original. Prerequisite: 215. *Mr. L. Herzberg.*

218 Introduction to Twentieth-Century Chinese Literature: 1950s to Present. An introduction to the literature and thought to come out of the People's Republic since 1949. Stories and essays from the PRC read in Chinese. Prerequisite: 215. *Mr. L. Herzberg.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

IDIS W13 Communication and Social Change in Postwar China. *Mr. P. Chow.*

IDIS W14 Japanese Films/Japanese Society. *Mr. L. Herzberg.*

Classical languages

*Professors K. Bratt (chair), G. Harris, R. Wevers
Associate Professor M. Williams*

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 combines some study of one of the languages with a broad study of Graeco-Roman civilization and its later influence. The Classical Languages program is designed for graduate studies, the Greek language program is for pre seminarians 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.

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, Art 233, Art 235, Greek 101-102, History 201, History 302 (if not elected above), History 303, Latin 101-102, Philosophy 312, Political Science 305, Religion 341,

Communication Arts and Sciences 325, Communication Arts and Sciences 317, or additional courses in the selected language. Classics 241 or 242 may substitute for the required interim.

The Classical Languages program requires fourteen courses and one interim, including six elementary or intermediate courses chosen from: Latin 101-102, 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, 205 or 206, 301-302; and two culture and civilization courses selected from: Classics 211, 221, 231, 311, 312, or History 301. Classics 241 or 242 may substitute for the required interim. Reading competence in French and German is also recommended.

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

The Latin language program requires six courses selected from: Latin 101-102, 201-202, 205-206, 301-302, 303-304; and three additional courses selected from this group or from Classics 211, 221, 231, 311, 312, or History 301.

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. Students whose qualifications permit them to omit Latin 201 or 202 should consult the department chair regarding special major or minor programs. 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 professional degree programs may be met by Classics 211. Classics 231, Classical Mythology, may be part of the teaching minor in the academic study of religions. Completion of Latin 202 or Greek 202 (or their equivalents) satisfies the college language requirement.

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 extensively 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. *Mr. K. Bratt.*

221 Graeco-Roman Art and Architecture. S, 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. S, 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. M. Williams.*

241 Vocabulary Development Through Latin and Greek Roots. F, half course. An organized study of the Latin and Greek origins of English vocabulary. Students will learn to identify the Latin and Greek bases of English words and so be able to enlarge their vocabulary and to give it etymological precision. Students with a special interest in scientific vocabulary may prefer Classics 242, Biological and Medical Vocabulary from Greek and Latin. *Mr. R. Wevers.*

242 Biological and Medical Vocabulary from Greek and Latin. S, half course. A study of the basic Greek and Latin components of scientific terminology, especially intended for students in biology and the health sciences. Non-science students might prefer the course in general vocabulary, Classics 241. *Mr. R. Wevers.*

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 1990-91.

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 con-

stitution 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. *Staff.* Not offered 1990-91.

GREEK

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

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. *Mr. G. Harris.*

202 Intermediate Greek A. S, core. Readings in Homer's *Odyssey*. Special attention is given to gaining reading proficiency in Greek poetry and to exploring some major themes of Greek religion and mythology. Prerequisite: three semesters of Greek. *Mr. K. Bratt.*

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.* Not offered 1990-91.

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: three semesters of Greek. *Staff.* Not offered 1990-91.

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. Wevers.*

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

301 **Plato's Major Dialogues.*** S, core. The Greek text of a major dialogue such as the *Republic* or the *Gorgias* is studied with a view to an understanding and evaluation of Plato's social and political views. 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 1990-91.

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. K. Bratt.*

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. *Staff.*

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. *Mr. M. Williams, Mr. K. Bratt.*

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. G. Harris.*

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. *Staff.*

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. *Mr. R. Wevers.* Not offered 1990-91.

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. *Mr. M. Williams.* Not offered 1990-91.

303 **Latin Epic and Lyric Poetry.** F, 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. *Mr. K. Bratt.*

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. *Mr. G. Harris.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **Interim in Greece and Turkey.** Off campus. *Mr. K. Bratt, Mr. M. Williams.*

W50 **Review Greek.** *Mr. G. Harris.*

IDIS W23 **Introduction to Computers for the Humanities.** *Mr. R. Wevers.*

Communication arts and sciences

*Professors P Blom, R. Bytwerk (chair), D. Holquist, J. Korf, T. Ozinga, Q. Schultze,
M. Vande Guchte, R. Fortner
Assistant Professor W. Romanowski
Instructor R. Buursma*

PREREQUISITE TO A MAJOR is completion of two regular courses, one of which must be 100, 101, 200, 203, 214, or 240; and a minimum average of C (2.0) in all departmental courses completed. In addition to a general major, the department offers majors with emphases in theatre, telecommunications, and teacher education. Not more than one course unit of 220 may be applied to a major.

The general major includes 200, 203, 217, 230 or 253, 305 or 325, and four other CAS courses, one of which must be an interim. A general CAS minor consists of 200, 203 or 217, 230 or 253, 305 or 325, and two other CAS courses. 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 rhetoric, cognate courses are chosen with the student's advisor.

Students wishing an emphasis in theatre should take 200, 203, 217, 218, 317, 318, two courses selected from 304, 316, and 319, and an approved interim.

Students wishing an emphasis in telecommunications should take 150, 200 (or 101 or 100 and 110), 203 or 218, 230, 251, 352, two courses selected from 253, 305, 325, and 330 and two electives, one of which should be an interim. A joint theatre / telecommunications emphasis consists of 200 (or 101 or 100 and 110), 203, 217, 218, 230, 251, 253 or 305, 317 or 318, one course selected from 316, 319 or 325, and an approved interim.

The secondary school teaching major consists of 200, 203, 211, 217, 230, 253, 316, and two other courses. Students majoring in CAS will do their student teaching in their minor area. The elementary school teaching major includes 203, 214, 215, 217, 253, 316, and three other courses. The six-course secondary school teaching minor includes 200, 203, 211, 217, 253, 316, and a half-course elective. The elementary teacher education minor requires 214 in place of 100 for the core, 203, 215, 217, 253, and one elective. No more than one course unit of 220 may be counted toward a concentration.

Students wishing an emphasis in communication disorders should take 100 or 214, 110, 150, 203, 215, 216, 307, 308, and an approved interim. The requirements for a Bachelor of Science in Communication Disorders are given on pages 74-75.

The group minor in journalism, a program involving the department, is described under the Department of English, page 140.

The core requirements in spoken rhetoric may be met by 100, 101, 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.*

101 Oral Rhetoric. F and S, core. The purposes of the course are to help students understand and apply the principles of invention, organization, style and delivery; interpret and evaluate speeches by others; and analyze and respond appropriately to a variety of speech audiences and occasions. Not open to students who have taken 100. *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.*

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. *Mr. R. Buursma.*

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, leader-

ship, and persuasion. Standards for ethical conduct are considered throughout the course. *Staff.*

250 Intercultural Communication. See Sociology 253.

325 Rhetorical Theory and Criticism. S, core. The theory and criticism of rhetoric from antiquity to the present. Classical and modern theorists are studied. Methods of rhetorical criticism are discussed and applied. Prerequisite: 200, or consent of the instructor. Not offered 1990-91.

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. W. Romanowski, Mr. R. Fortner.*

251 Technical Aspects of Video. F and S. 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. *Mr. J. Korf.*

253 Television Criticism. F and S, core. The study of various important cultural and artistic forms in television drama. The first section of the course is a critical study of selected examples of the finest drama produced for public and commercial television in Britain and the U.S. Students use traditional and contemporary criteria to interpret, examine, and evaluate programs. The second section of the course is an examination from a Christian perspective

of the dominant myths and themes in popular drama, including soap operas, detective shows, westerns, situation comedies, and adventure series. Topics include: 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.* F and 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 and totalitarian propaganda. *Mr. R. Bytwerk.*

306 American Politics and Mass Media. See Political Science 318.

330 International Communication. S. The course examines communication across international borders. Topics include the history, use, and regulation of international communication technologies, world information flow (including the debates over the New World Information Order and cultural imperialism), international communication law, and international communication by non-governmental bodies. *Mr. R. Fortner.*

346 Internship in Communication. S. Students apply theoretical, ethical, and technical aspects of their college education to specific communication situations. Personal journals, a research paper, and seminar participation are required. Prerequisite: consent of the instructor. *T. Ozinga.*

352 Communication Ethics. F and S. 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 332, or consent of the instructor. *Mr. R. Fortner, Mr. Q. Schultze.*

395 Seminar: Directing the Documentary. F. A study of the history and aesthetics of the documentary. Students will practice the craft of video directing, dealing with the practicalities of using the screen as a medium of inquiry and presentation. Research will culminate in a 15-20 minute program. Labs required. Prerequisite: CAS 251 and consent of the instructor. *Mr. J. Korf.*

COMMUNICATION DISORDERS

110 Voice and Articulation. F, 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.*

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. S, 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. *Mr. M. Vande Guchte.*

307 Structures and Functions of the Speech Mechanisms. S, alternate years. 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 consent of the instructor. *Mr. M. Vande Guchte.* Not offered 1990-91.

308 Basic Audiology and Audiometry. S, alternate years. 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: consent of instructor. *Mr. M. Vande Guchte.*

THEATRE 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. *Staff.*

217 **An Introduction to the Theatre.** F, core. An introduction to the study of theatre. 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. *Ms. E. Boeré.*

218 **Principles of Acting.** F. An introduction to the art of acting. Through readings, discussions, and numerous in-class exercises the students will become acquainted with the major acting theories and will begin to discover those techniques with which they are most comfortable. The course is for students interested in theatre-related professions as well as for students wishing to deepen their understanding of theatre and dramatic structure. Prerequisite: 217, or consent of the instructor. *Ms. P. Blom.*

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. *Ms. P. Blom.*

304 **Advanced Interpretation.** S, alternate years, core. Continuation of 203. Application of its principles to the novel and drama. Intensive study in preparation for a reading program. Prerequisite: 203. *Mr. D. Holquist.* Not offered 1990-91.

316 **Principles of Directing.** S, alternate years. An introduction to the theory of directing. Through readings, play attendance, discussions and exercises, the students will develop a basic understanding of the directing process and an appreciation for the art of directing. This course is for students interested in theatre-related professions as well as for students wishing to deepen their understanding of theatre and dramatic structure. Prerequisites: 217 and 218, or consent of the instructor. *Mr. J. Korf.* Not offered 1990-91.

317 **History of Theatre and Drama.*** S, alternate years, core. A historical and analytical study of theatre and drama from its origins to the nineteenth century. *Mr. E. Boeré.*

318 **History of Theatre and Drama.*** S, alternate years, core. A continuation of 317. A historical and analytical study of theatre and drama from the nineteenth century to the present. Not offered 1990-91.

319 **Design for Theatre.** F, alternate years. A study of the theories and principles of theatre 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 consent of the instructor. *Mr. J. Korf.*

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: consent of the instructor. *Staff.*

395 **Seminar: Folk Drama.** S. A study of selected folk drama from the Eastern and Western traditions. Pieces considered range from traditional legends and characters such as the Ramayana and Hanswurst to modern multi-ethnic and multi-cultural pieces. Research will culminate in lab theatre productions. Prerequisite: Consent of the instructor. *Ms. E. Boeré.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **Styles of Production.** Off campus. *Mr. J. Korf.*

W11 **Communication Disorders and Aging.** *Mr. M. Vande Guchte.*

W12 **Nazi and Soviet Propaganda.** *Mr. R. Bytwerk.*

W50 **Christ and Popular Culture.** *Mr. D. Holquist, Mr. W. Romanowski.*

IDIS W13 **Classical Arts in Italy.** Off campus. *Mr. E. Boeré, Ms. E. Boeré.*

Computer science

Professors J. Bradley, D. Brink, T. Jager, D. Laverell, S. Leestma, L. Nyhoff
Assistant Professor J. Adams

A PROGRAM OF CONCENTRATION in computer science consists of 151, 152, 245, 253, 392, and additional courses selected from 251, 267, 283, 335, 353, 355, 367, 373, 375, 383, or an approved interim course. The additional courses must include a two-course sequence in some area of emphasis. Possible areas of emphasis and course sequences are: systems programming—373 and 375, computer science theory—353 and 355, management information systems—267 and 367, database systems—353 and 363 and computer hardware—283 and 383. A minimum grade of C (2.0) in a 200-level computer science course is required for admission to a program of concentration.

Programs with an emphasis in management information systems must include 231, 363 and one upper level computer science elective. The mathematics cognate for these programs is 161, 162 and 243. Students selecting this area of emphasis are encouraged to complete a minor program in Business. The suggested minor program is Economics 221, Economics 222, Business 203, Business 360 and two from Business 204, Business 315, Business 325, Business 359 or Business 363.

Programs with an emphasis in any of the other areas must include 251 and two upper level computer science electives. The mathematics cognate for these programs is 161, 162 and 255. Mathematics 261 and Computer Science 141 are recommended.

A computer science minor consists of 151, 152, 245, 253, 392, and two additional courses selected from 283, 335, 353, 355, 363, 373, 375, 383, or an approved interim.

A minor in management information systems is 151, 152, 231, 267, 363, 367 and 392.

A secondary education major and minor are also available. Group concentrations involving mathematics, physics, business, and other disciplines 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. *Staff.*

121 Introduction to Business Computing. F and S. An overview of computer information 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.*

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. *Staff.*

151 Computer Programming I. F and S. 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. Prerequisites: two years of high school algebra, or permission of the instructor. *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 good programming style. Prerequisites: 151 or permission of the instructor. *Staff.*

231 Programming in COBOL. An introduction to the programming language COBOL based on the student's understanding of structured programming from CPSC 151. Emphasis will be placed on the use of structured programming principles in COBOL and on applications of COBOL to information processing. Topics covered include subroutines, input-output, logical structure, management of types of data, and file organization and management. Half course. Prerequisite CPSC 151.

233 Programming in C. An introduction to the programming language C based on the student's understanding of structured programming from CPSC 151. Emphasis will be placed on the special features in C not seen or emphasized in the student's previous programming experience. Topics covered include variables, operators, control flow, functions, storage classes, arrays, pointers, input and output, and structures. Half course. Prerequisite CPSC 151.

245 Computer Organization and Assembly Language Programming. F. 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 addressing schemes, formats, and assembly language programming. Prerequisite: 152. *Mr. D. Laverell.*

251 Discrete Mathematic Structures. Combinatorics and Graph Theory including general counting methods, generating functions, basic properties of graphs and Polya's enumeration formula. Formal languages and grammars including finite state machines, languages generated by a gram-

mar, and regular languages and expressions. Prerequisite: CPSC 152 and Math 162.

253 Programming Language Concepts. S. Principles and programming styles that govern the design and implementation of contemporary programming languages. Topics covered include language syntax, processors, representations, and styles. Several different languages will be introduced and examined in the light of the above principles. Prerequisite: 152. *Staff.*

267 Systems Analysis, Design, and Implementation. A study of systems analysis tools and techniques including data flow diagrams, data dictionaries, decision modelling and costs-benefit analysis; systems design concepts including design of user interfaces, human factors, file design and modular design of systems; implementation concepts including consideration of the construction and delivery phases; documentation. Prerequisite: CPSC 152.

283 Introduction to Digital Electronics. F, alternate years. 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 280 or Engineering 204 and 284. Laboratory. (Also listed as Physics 285.) Prerequisite: Mathematics 132 or 161. *Staff.* (Offered in 1990-91 during Interim only.)

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 the instructor. *Staff.*

353 Data Structures and Algorithms. F. This course is a systematic study of algorithms, their complexity, and their application to fundamental data structures such as graphs and trees. The limitations of algorithms are also treated. Prerequisites: 251. *Staff.*

355 Theory of Computation. S. Topics from the theory of computation including

finite state concepts, formal languages and grammars, computability, computational complexity. Prerequisite: 353. *Staff.*

363 Database Management Systems.* S. 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: 152. *Staff.*

367 Information Systems Project. The focus of this course is the development and implementation of a functioning information system. This includes feasibility study, analysis, design, implementation, and writing of documentation. Prerequisites: CPSC 267 and 363.

373 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: 245 (previously 243) and 253. *Mr. J. Adams.*

375 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, pars-

ing, storage allocation, error detection, and object code generation. Prerequisites: 245, 251 and 253. *Mr. J. Adams.*

383 Introduction to Microprocessors.* S, alternate years. 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.) Prerequisites: 283 (previously 285) or its equivalent and programming experience. *Staff.*

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, 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 chair. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

IDIS W12 Mission and Service in Haiti. Off campus. *Mr. J. Bradley, Mr. R. Van Andel.*

Dutch

Professors M. Bakker (program coordinator), B. Carvill (chair, Department of Germanic Languages)

PROGRAMS FOR STUDENTS wishing to minor or major in Dutch are worked out for them individually by the departmental advisor. 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. The typical six-course minor requires two additional courses. The typical ten-course major requires six additional courses. The major in Netherlandic Studies requires ten courses consisting of the following: four Dutch language

courses on the first- and second-year level or equivalent; three 300-level courses in Dutch literature and culture; two courses from among Art 236 (History of Dutch Paintings), History 221 (The Netherlands), Dutch 307 and 308 (Readings in Dutch Church History), and one approved interim course such as Frisian, Afrikaans, the interim in the Netherlands, or one interim course on Dutch politics, history, sociology, art, and religion.

101 **Elementary Dutch.** F. An introductory course in the comprehension and use of spoken and written Dutch. *Mr. M. Bakker.*

102 **Elementary Dutch.** S. Continuation of 101. *Mr. M. Bakker.*

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

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 comprehend and write the language. *Mr. M. Bakker.*

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

261 **South African Society and Literature.** A systematic study of the development of various ethnic groups (primarily African, Dutch and English) in South Africa with special emphasis on the contributions each has made by way of literature to the country's socio-cultural life. Taught in English. Satisfies the "foreign culture" option of certain pre-professional programs.

305 **Dutch Classics.*** Core. Study and discussion of several Dutch literary texts representative of the classical and modern

periods of Dutch literature. Because the literature studied is varied from year to year, the course may be repeated for credit. This course is normally conducted in Dutch. *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 1500–1700. *Mr. G. Spykman.*

308 **Readings in Dutch Church History.*** S. A continuation of 307 for the period 1700–present. *Mr. G. Spykman.*

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

390 **Independent Study.** *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W50 **Life Behind the Dikes: Interim in the Netherlands.** Off campus. *Mr. M. Bakker.*

Economics and business

Professors J. Dodge, E. Dykema (chair), K. Kuipers, †G. Monsma, D. Pruis, S. Simpson, *J. Tiemstra, †E. Van Der Heide

Associate Professors D. Cook, R. Hoksbergen, R. Karppinen, †S. Roels, K. Schaefer, R. Slager

Assistant Professors J. Ibe, M. McGervey, S. Vander Linde, S. Vander Veen, T. Weeda

Adjunct Professor R. Vander Weele

THE DEPARTMENT HAS STRUCTURED its major areas of study so that students may design programs to best prepare themselves for their chosen career fields, or to help them make those choices. It 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 and in economics, as well as teacher education majors and minors. Prerequisite to admission to any major concentration is a minimum grade of C (2.0) in Economics 221. Students who, before deciding on a major, complete 151 can be admitted to a major with a minimum grade of B- in that course.

The business major requires Business 203, 204, 260, 370, 380, four courses in economics, two departmental electives, the mathematics cognate, and a cognate in computer science.

Two of the economics courses and the two department electives are chosen as part of a planned program in an area of interest to the student. Students may choose to emphasize general business, finance, marketing or management (either human resource management or operations management). Program options are specified in the "Economics and Business Survival Guide," which is available from the department office, or from any department faculty member.

The B.S. in Accountancy requires Business 203, 204, 301, 302, 305, 350, 260, 370, 380; three from 306, 310, 311, and 315; four courses in economics, the mathematics cognate, and the computer science cognate. Business 319 is a recommended elective; however, a minimum of eighteen course units must be taken in departments other than Economics and Business. Students wishing to meet CPA 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 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 a designated interim course. Students who began by taking Economics 151 may, with permission of the department, continue with two courses from the 323–326 group and one additional course from Economics 331–339. Economics 151 is not recommended for departmental majors.

The economics major requires Economics 221, 222, 323 or 325, 324 or 326, 395, three from 331–345, two other departmental courses, and the mathematics cognate. Students who have taken Economics 151 may, with permission of the department, continue with 323 or 325, 324 or 326, four from 331–345, 395, two

other departmental courses, and the mathematics cognate. Teacher certification in economics requires one less departmental elective.

The 300-level courses taken within the economics major are chosen as part of a planned program in an area of interest to the student. Students may choose a general program, a graduate school preparatory program, or an emphasis in international economics, business economics, or public policy. Program options are specified in the "Economics and Business Survival Guide," which is available in the department office.

The social science group major may have either a business or an economics emphasis. The business emphasis requires Business 203, 260, 380, Economics 221, 222, one course from Economics 323–343, or an approved economics interim, two additional departmental courses, four courses from one of the other social sciences and a statistics course (Math 143 or its equivalent). Students who begin with 151 must take one additional economics course from 323–326 and one other economics course from Economics 323–339. The economics emphasis requires Economics 221, 222, 323 or 324, two more from 323–345, two additional departmental courses, four courses from another social science and a statistics course (Math 143 or its equivalent). 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 203, 204, 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, Mathematics 161, 162, 255, 261, 343, 344, and the computer science cognate. Variations should be approved by a departmental advisor.

The business minor requires Business 203, 260, Economics 221, 222, and two other business courses (or Economics 151 plus two business courses and one other course in either business or economics). The economics minor requires Economics 221, 222, either 323 or 324 (or Economics 151 and both 323 and 324), and three courses from Business 203 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 203 and Economics 323–345, including up to two approved interims.

The minimum mathematics cognate for business and economics majors and for the Bachelor of Science in Accountancy is 143 and 132; an alternative is 161, 162, and 243. However 161, 162, 255, 261, 343, and 344 are recommended mathematics courses. Although the computer science cognate can be met by any full course in computer science, Computer Science 121 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 or minoring in economics or business, 221. However, only one of these courses may be counted toward a departmental major or minor.

BUSINESS

203 **Introduction to Managerial Accounting.**

F. After a brief introduction to the principles of financial accounting and the purpose of financial statements, the course provides an introduction to managerial accounting concepts, budgeting, incremental cost and profit analysis, breakeven analysis, responsibility reporting, and the use of financial analysis for managerial decision-making. Not open to freshmen. *Mr. D. Cook, Mr. R. Karppinen, Mr. K. Kuipers, Mr. D. Pruis, Mr. R. Slager.*

204 **Financial Accounting.** S. A continuation of the study of accounting. After considering the importance of generally accepted accounting principles and the study of the accounting cycle, the course emphasizes asset valuation, classification and measurement of liabilities, and income determination. Prerequisite: 203. *Mr. D. Cook, Mr. R. Karppinen, Mr. D. Pruis, Mr. R. Slager.*

260 **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 students. *Mr. M. McGervey, Mr. R. Karppinen, Mr. S. Simpson.*

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: 204. *Mr. D. Cook.*

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. *Mr. K. Kuipers.*

305 **Cost Accounting.*** F. Principles and methods of accounting for manufacturing and operating costs with emphasis on analysis and reporting to management to facilitate planning, control, and decision-making. Prerequisite: 204. *Mr. D. Pruis.*

306 **Income Tax.*** F and S. 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: 203. *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. R. Slager.*

311 **Auditing.*** S. 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.*** 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. Prerequisites: 204 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. D. Pruis, Mr. L. De Lange.*

325 **Managerial Economics.*** S. 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 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 143, 243, or 343. *Mr. K. Schaefer.*

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 143, 243, or 343. *Mr. S. Vander Linde.*

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. *Mr. D. Buter, Mr. T. Waalkes.*

357 Business Aspects for Engineers. F, half course. 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. *Mr. R. Vander Weele.*

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. *Mr. S. Simpson.*

363 Production and Operations Management.* An extension of principles of management into topics dealing with the design, control, and evaluation of production and operation functions of the business firm. Emphasis is placed on the application of quantitative techniques to business decisions. Prerequisites: 260 and Mathematics 143 or its equivalent. Not offered 1990-91.

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: 260 or permission of the instructor. *Mr. G. Triezenberg.*

367 Small Business Management. F. The study of business management principles, opportunities and challenges in the small business arena. The focus of the course is on the establishment and operation of small businesses. Topics include: new venture planning, market analysis, financial control and management. Prerequisites: 203, 260, 380; senior departmental major status or permission of instructor. *Mr. D. Cook.*

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: Economics 151 or 221, and Business 204. *Mr. D. Cook, 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. *Mr. R. Vander Weele.*

372 Advanced Corporate Finance. S. The principles of finance will be applied to current financial topics including analysis and forecasting of corporate performance, valuation, risk, the cost of capital, and strategic investment and financing decisions. Emphasis will be placed upon the development of using financial spreadsheet programs, and business case problems. Prerequisite: 370. Not offered 1990-91.

380 Marketing.* F and S. A study of the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services that satisfy individual and organizational needs and objectives. Prerequisite: Economics 151 or 221. Not open to freshman students. *Mr. S. Vander Veen, Mr. D. Rietberg.*

381 Advanced Topics in Marketing.* F and S. This course deals with topics involving consumer behavior, the market research process, sales management, advertising, and marketing strategy. Students will work on the marketing problems of local organizations as a practicum. Prerequisite: 380. *Mr. S. Vander Veen.*

390 **Independent Study.** F, I, S. Prerequisite: permission of the department chair.

396 **Business Seminar.** S. An integrative study of strategic management, requiring contemporary, comprehensive case applications of concepts from economics, marketing, accounting, finance, management, and international business. Ethical aspects of strategic decision making will be emphasized. A management simulation game may also be used. Student teams will study cases and present their analyses. This course is recommended for students wishing to understand the formulation and implementation of ethical strategies in diversified businesses. Prerequisites: 260, 370, 380; Economics 222 or permission of instructor. *Mr. S. Simpson.*

590 **Independent Study.** F, I, S. Prerequisite: permission of the department chair. *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. Not recommended for majors or minors. *Mr. J. Dodge, Mr. R. Hoksbergen, Mr. J. Ibe, Mr. T. Weeda.*

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. E. Dykema, Mr. R. Hoksbergen, Mr. K. Schaefer, Mr. J. Tiemstra.*

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. Ibe, Mr. K. Schaefer, Mr. J. Tiemstra, Mr. T. Weeda.*

241 **The U.S. Health Economy.** F. A study of the institutions that comprise the U.S.

health care system from an economic viewpoint. The course examines the development of U.S. health care institutions, public policies that have shaped it, and the economic interactions between health care consumer, provider, and insurer. Focus will be placed on issues of resource allocation, cost containment, quality assessment, and government provision. This course is recommended for students who are seeking a professional career in a health care discipline. Not open to freshman students. *Mr. S. Vander Linde.*

323 **Intermediate Microeconomics.*** F. 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. *Mr. J. Dodge.*

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. *Mr. S. Vander Linde.*

325 **Managerial Economics.*** S. 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 143, 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 143, 243, or 343. *Mr. S. Vander Linde.*

331 Money and Banking.* F and S. 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, Mr. J. Tiemstra.*

332 Environmental Economics and Public Policy.* 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 the instructor. Not offered 1990–91.

334 Industrial Markets and Public Control.* 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. Not offered 1990–91.

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. *Staff.*

336 Comparative Economic Systems.* F. 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. *Mr. K. Schaefer.*

337 World Poverty and Economic Development.* S. 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. S. Vander Linde.*

343 Quantitative Economics and Econometrics. S. A study of mathematical and statistical tools and applications in economics and business. The course examines such mathematical tools as input-output analysis, linear programming, and econometric models, and will involve a significant amount of computer use. This course is recommended for students considering graduate work in either economics or business. Prerequisites: Math 143 and 132 or their equivalents, and one course from Economics 323–326. *Mr. K. Schaefer.*

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, 222, or permission of the instructor. Not offered 1990–91.

349 Internship in Economics. F and 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 standing, and permission of the internship coordinator. *Staff.*

390 Independent Study.* F, I, S. Prerequisite: permission of the department chair. *Staff*

395 Economics Seminar.* S. 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.*

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W10 **How Business Works in America.** Mr. K. Schaefer, Mr. R. Slager.

W50 **Financial Management in Banking.** Partially off campus. Mr. K. Kuipers.

W52 **Case Studies in Financial Decision Making.** Mr. D. Cook.

W53 **Reforming Economics: Christian Views.** Mr. J. Tiemstra.

IDIS W20 **Five-Hundred Years after Columbus: Central America Today.** Mr. R. Hoksbergen.

IDIS W21 **Leadership and Management in the Christian Organization.** Mr. R. Karpinen.

IDIS W22 **Christian Perspectives on Work and Vocation.** Mr. S. Simpson, Mr. G. Van Anandel.

IDIS W50 **Interdisciplinary Problem Solving.** Partially off campus. Mr. J. Dodge, Mr. M. Vander Wal.

Education

Professors B. Bosma, P. De Boer, T. Hoeksema*, C. Kass, P. Lucasse, C. Mulder, D. Oppewal, L. Stegink (chair), G. Stronks, J. Wiersma
Associate Professors M. Kraker, A. Post, Y. Van Ee

THE VARIOUS TEACHER EDUCATION PROGRAMS are described in detail on pages 57-67. Prospective elementary and secondary teachers should initially consult the teacher education advisor 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 Ms. Myra Kraker, coordinator of special education: learning disabilities.

The elementary teacher education program requires nine professional education course units: 301, 303, 304, 305, 309, 322, 324, 325, and 345. 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 academic standing before beginning 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. Prerequisite: admission to the teacher education program. *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, or permission of instructor. Mr. P. De Boer, Mr. D. Oppewal.

305 Teaching Social Studies in the Elementary School. F and S, half course. A study of perspectives, content, methods, and materials in teaching the social studies in the elementary school. Students will analyze perspectives and determine major goals and themes for the teaching of social studies. They will study and analyze the contributions of the various disciplines to the social studies curriculum. Students will examine materials and learn and practice methods for teaching the social studies. Biblical principles which offer direction for human interactions in society will be considered. Prerequisites: 301-303 or permission of the instructor. *Mr. C. Mulder.*

307 Reading in Content Areas: Secondary. *F and S, 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. Prerequisites: 301, 303 or permission of instructor. *Mr. L. Stegink, Ms. G. Stronks.*

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, Ms. G. Stronks.*

309 Teaching Religion Studies in the Elementary School. F and S, half course. A study of perspectives, content, methods, and materials in teaching religion studies in the elementary school. This includes pedagogy appropriate for public and non-public schools and evaluation of methods and materials. Prerequisites: 301-303 or permission of the instructor. *Ms. Y. Van Ee.*

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 in-

structional strategies appropriate to a developmental reading program; an analysis of the organization and management of a classroom reading program. Prerequisites: 301, 303 or permission of instructor. *Ms. B. Bosma, Ms. G. Stronks.*

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. Prerequisites: 322 and concurrent enrollment in 345 or permission of the instructor. *Ms. B. Bosma, Ms. A. Post.*

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. Prerequisites: 322 and concurrent enrollment in 345 or permission of the instructor. *Ms. B. Bosma, Ms. A. Post.*

345 Directed Teaching: Elementary. F and S, three course units. Students participate in full-time supervised practice teaching. Prerequisites: good standing in the teacher education program and appropriate recommendations. *Staff.*

346 Directed Teaching: Secondary. F and S, 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, 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 issues 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. Prerequisites: 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, three course units. *Mr. T. Hoeksema.*

GRADUATE COURSES

501 **Advanced Educational Psychology.** An examination of psychoeducational theories of development from the perspective of selected theorists. Consideration is given to

the application of these theories to the educational environment and the implications of these theories with regard to intellectual development. Aspects of faith and moral development are considered. *Ms. C. Kass, Ms. M. Kraker, Ms. B. Stronks.*

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. *Ms. M. Kraker.*

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. Prerequisites: 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, Ms. M. Kraker.*

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, preschool 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 an Educational 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. *Staff.*

537 Curriculum Theory and Development: 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. *Staff.*

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 creation and implementation of staff development programs. Prerequisite: 534 or permission of the instructor. *Mr. C. Mulder.*

539 Current Issues in Early Childhood Education. An examination of support systems for the young child, including interrelationships among caregivers; issues and trends in child advocacy and public law and policy; administration and organization of early childhood programs. *Staff.*

540 Reading Problems in the Classroom. This course is designed to enable experienced teachers to work with problem readers in their own classrooms. The course includes: a study of the various kinds of reading problems encountered at all levels 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, 307-308, or the permission of the instructor. *Ms. 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, or permission of the instructor. *Ms. B. Bosma, Ms. A. Post.*

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. *Ms. B. Bosma.*

547 Early Childhood Education Curriculum and Instruction: Field Experience. A study of teaching methods, materials, and classroom organization as they relate to the various early childhood curricula. The focus will be on implementing curricula. A field experience in two or more early childhood settings will meet state requirements. Prerequisites: 536, 537, and 539.

548 Practicum: Learning Disabilities-Elementary. One and one-half units. Students who have not had prior supervised teaching experience in special education are required to complete a full-time supervised teaching experience of ten weeks. Students who are seeking a second endorsement in special education must complete a practicum with a minimum of 180 hours in an appropriate setting. A seminar integrating theory and practice is included in this course. *Staff.*

549 Practicum: Learning Disabilities-Secondary. One and one-half units. Students who have not had prior supervised teaching experience in special education are required to complete a full-time supervised teaching experience of ten weeks. Students seeking a second endorsement are required to complete a minimum of 180 hours in an appropriate setting. A seminar integrating theory and practice is included in this course. *Staff.*

550 Theories of Learning Disabilities. F. This course acquaints students with the major theoretical models of learning disabilities. Research related to general characteristics, language acquisition, academic, social development, and problem solving performance of the learning disabled is examined. Approaches to the education of the learning disabled based on the theoretical models are also studied. Current issues

in the field are discussed. Federal and State special education legislation is examined. Prerequisite: 216. *Ms. M. Kraker.*

551 Diagnosis and Prescription: Learning Disabilities. S. 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. Supervised clinical experience is an integral part of this course. Prerequisite: 550. *Ms. M. Kraker.*

580 Curriculum Theory and Development. S. 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. Prerequisite: teaching experience. *Staff.*

581 Educational Philosophy and Curriculum Decisions. F. 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 and one in philosophy of education. *Mr. D. Oppewal.*

582 Curriculum and Instruction: Learning Disabilities-Elementary. F. Curriculum and instructional methods related to oral language, reading, writing, mathematics, problem solving, and uses of computer technology are examined. Meeting IEPC goals in classroom instruction is considered. Prerequisite: 550. *Ms. M. Kraker.*

583 Curriculum and Instruction: Learning Disabilities-Secondary. F. Curriculum and instructional methods for secondary education are considered. Research relative to cognitive and linguistic changes in adolescence is explored. Meeting IEPC goals and management techniques are considered. Particular emphasis is placed upon using community resources as a learning environment. A field experience is an integral part of this course. *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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 Crisis in Adolescence: Problems Teenagers Face. *Ms. A. Post.*

W11 Current Educational Approaches: Bane or Boon? *Ms. P. Oostenink.*

W50 Writing: Beyond Scribes and Clerks. *Ms. M. Kraker.*

W51 International Education: Amsterdam. *Off campus. Ms. G. Stronks.*

W52 The Social World of the Child. *Ms. Y. Van Ee.*

W53 Integrating Children with Disabilities. *Mr. T. Hoeksema.*

W54 Educational Technology: New Tools for Educators. *Mr. R. Nieuwsma.*

304 Philosophy of Education. *Mr. D. Oppewal.*

IDIS W15 An Israel Interim: Biblical and Political Perspectives. *Off campus. Mr. P. DeBoer.*

IDIS W51 Urban Education: Exploring Successful Programs in Chicago. *Off campus. Mr. C. Mulder.*

Engineering

*Professors R. De Jong, R. Hoeksema, L. Van Poolen (chair)
Associate Professor M. Vander Wal
Assistant Professors R. Bronwer, B. Post, R. Van Andel
Instructor †S. Vander Leest*

CALVIN COLLEGE offers a Bachelor of Science in Engineering degree (B.S.E.) with concentrations in civil, electrical, and mechanical engineering. The B.S.E. program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. For details of this program see pages 72-76.

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, two of which must be from engineering or geology and two approved cognates from a third department within the Science Division. At least two of the geology and / or engineering courses must be at the 300 level. 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 within the Science Division.

The Engineering Department is served by an advisory council. Current members are Mr. Ned Nielsen of Laser Alignment (chair), Mr. Larry Aldrink of Stow & Davis, Mr. Leonard DeRooy, P.E., of Greiner, Inc., Mr. Alvin Elders of Haworth Corporation, Mr. Gordon Haan of JET, Electronics and Technology, Mr.

Paul Newhof of Newhof and Winer, Mr. Gary Post of Owen-Ames-Kimball Company, Mr. Charles Spoelhof of Eastman Kodak, Inc., and Dr. Lambert Vander Kooi of Western Michigan University. Calvin College is an affiliate member of the American Society for Engineering Education (ASEE) and the Junior Engineering Technical Society (JETS).

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, sections, basic dimensioning and tolerancing; an introduction to the design process by means of lectures and assigned design projects. Readings are assigned in design-related areas of creative thinking, and modeling. The student is also introduced to engineering design through the use of computer-aided drawing and analysis software. *Staff.*

102 Engineering Communication, Perspective, and Design. S, half course. A continuation of 101 in which graphical presentation culminates in the working drawing. An introduction to the programming aspects of computer graphics is given. Readings, lectures, and discussions examine the areas of the role of technology in society, engineering ethics, engineering liability, and human factors in design. An engineering project is assigned to further enhance creative skills in design. Prerequisites: 101, 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 computer graphics. 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.*

204 Circuit Analysis and Electronics. S. An introduction to the theory of electronic circuits and devices and their applications. The following topics are included: basic linear circuits including passive circuit elements and analysis of linear circuits; semiconductor devices, diodes, SCR's, Triacs, Voltage Regulators, Comparators, and Timers; and electric power and machines, include dc and synchronous ac machines. Prerequisites: Physics 225, Mathematics 261, and concurrent registration in Mathematics 231. *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.*

284 Circuit Analysis and Electronics Laboratory. S, quarter course. Laboratory course which uses lecture and laboratory exercises to illustrate the material covered in 204. Measurements of voltage, current, resistance, power, transient response, resonant circuits, voltage regulators, and timer circuits will be made. Operational amplifiers and their applications, digital logic circuits, and ac and dc machines will be examined. Prerequisites: Previous or concurrent registration in 204. *Staff.*

Prerequisite to all courses numbered 300 or higher is formal admission to the department.

302 Engineering Electromagnetics. F. A study of the laws and engineering applications of electric and magnetic fields in various conductive, dielectric, and magnetic

materials and under various boundary conditions. Emphasis is on the analysis and design aspects of transmission lines, waveguides, antennas, high frequency solid state circuits, and optical fiber systems. Prerequisites: Mathematics 261, 231, and Physics 225. (was numbered 301) *Mr. B. Post.*

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 assembly language programming, and asynchronous logic. The student is introduced to digital logic families, including TTL, CMOS, and ECL logic. Laboratory work will include logic design and assembly language programming. Prerequisites: 204, 284, and Computer Science 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.*

306 Principles of Environmental Engineering. S. Decision-making in the selection of environmental control measures and equipment. The emphasis is on water supply and wastewater system design. Topics include the following: water treatment systems, water quality management, wastewater treatment, solid waste management, and hazardous waste disposal. Prerequisite: junior or senior standing in the Engineering Department or approval of the instructor. *Mr. R. Hoeksema.*

307 Advanced Network Analysis. F. Advanced techniques for the analysis of analog electrical networks. Topics include: sinusoidal steady-state power calculations (including 3-phase), mutual inductance and transformers, resonance, s-domain analysis, Laplace transforms, Fourier series and Fourier transforms. Frequency response is analyzed using transfer functions, Bode plots, and pole / zero plots. Prerequisites: 204 and Mathematics 231. *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 are 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 (JFETs), metal-oxide semi-conductors FETs (MOSFETs), and bipolar junction transistors (BJTs). Application of these devices in basic amplifier circuits is explored. Laboratory exercises are used to illustrate concepts. Prerequisite: 204. *Mr. B. Post.*

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, Physics 126, 186 and 202. *Mr. R. De Jong.*

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: 204 and Mathematics 231. *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 and design projects are used to emphasize principles. Computer analysis is utilized. Prerequisites: 309, Mathematics 231, and Physics 126. *Staff.*

317 **Engineering Measurement and 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 design project emphasize actual applications. Prerequisite: 204 and 284. *Mr. R. De Jong.*

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. Design problems and laboratory exercises are utilized to emphasize principles. 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. R. Van Andel.*

325 **Digital Circuits and Systems Design** F. An overview of the LSI and MSI logic functions available in common digital logic families. Electrical characteristics of combinational and sequential devices in the TTL, CMOS and ECL families. Microprocessor architecture including basic components, stacks, memory organization and devices, bus standards, port based and memory mapped I/O. Interfacing and communication techniques including parallel and serial I/O, handshaking, bus control and timing, interrupts, and data error detection

and correction. Daily assignments and laboratory experiences emphasize the design of digital systems. Prerequisites: 304 and 311. *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 **Applied 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.*

332 **Analog Circuits and Systems Design.** S. Feedback principles and electronic circuit theory and device theory applied to multistage transistor amplifiers. Detailed study of operational amplifier specs, nonidealities, and compensation. Introduction to filter theory and practical realizations. Power supply design: rectifier circuits, linear and switching regulators. Nonlinear circuits: comparators, multipliers, Schmitt trigger, S/H circuits, multivibrators and oscillators. Introduction to noise analysis and low noise design. Emphasis on realization of designs using

commercially available IC's. Design experience emphasized in projects and the laboratory. Prerequisites: 307 and 311. *Staff.*

339 Senior Design Project. F, half course. The first course in the senior design project sequence. Introduction to various computer-related design tools including spread sheet analysis, linear and non-linear optimization, and computer-aided graphics and design. Emphasis is on design team formation, project identification, and completion of a feasibility study submitted in written / graphical report form. Prerequisite: concurrent registration in the seventh semester of the model program of a particular concentration or permission of the instructor. *Staff.*

340 Senior Design Project. S. A study of topics related to the practice of engineering design as well as the completion of a major design project initiated in 339. 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 prototype form where appropriate. Prerequisite: 339. *Staff.*

294 / 394 Engineering Seminar. F and S, no credit. A seminar devoted to an exploration of topics in engineering. Seminars will cover areas such as the practice of engineering design, non-technical issues in engineering practice, engineering graduate studies, and aspects of engineering analysis. Students will receive transcript recognition for 294 if they attend eight (8) seminars

prior to their admission to the engineering program at Calvin. Engineering students will receive transcript recognition for 394 if they attend eight (8) seminars after being admitted to third year status in Calvin's engineering program. Plant tours and technical society meetings may be substituted for seminars upon approval. 294 is not a prerequisite for 394.

390 Independent Study. F, I, S. Independent readings and research. Prerequisite: permission of the chair. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W50 Intermediate Mechanics of Materials. *Mr. R. De Jong.*

W51 Analysis and Design of Power-Electronics Circuits. *Mr. B. Post.*

W52 Finite-Element Analysis. *Mr. R. Hoeksema.*

IDIS W50 Interdisciplinary Problem Solving. Partially off campus. *Mr. J. Dodge, Mr. M. Vander Wal.*

IDIS W54 Computer Fervor: Information Technology in Human Affairs. *Mr. K. Konyndyk, Mr. K. Peterson.*

IDIS W55 Philosophy of Nature and Technology. *Mr. L. Van Poolen.*

English

*Professors R. Anker, H. Baron, L. Basney, E. Ericson (chair), **D. Hettinga, K. Kuiper, C. Otten, **J. H. Timmerman, *W. Vande Kopple, *C. Walkout, M. A. Walters*
Associate Professors W. D. Brown, S. Gallagher, G. Schmidt, J. Vanden Bosch, D. Ward
Assistant Professors C. Hodgkins, J. Johnson, M. Masson, J. Netland, B. Olson

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 English 100. Normally, English 100 is the first course taken in the department.

The recommended program for the general English major requires one course from each of the following groupings:

1. 202, 304, 305, 306, 307;
2. 203, 308, 309;
3. 304–309, 313–316;
4. 301, 302, 329, 330, 331;
5. 303;
6. 310;
7. 311.

It also requires three additional courses, which may include any of the above-listed courses or any others offered by the department, with the exception of 100, 212, 235, 251, 260, 325, 326, 335, 336, 359, 360, and 380. Only one interim course may count towards the major. No course may fulfill more than one of the ten requirements.

The recommended program for the secondary-education English major is as follows: 202; 203; 303; 310; 311; 220, 240, 251, or 326; 329 or 330; 313, 315, 316, or 319; and 336. Ideally, students should take English 336 in the semester immediately preceding their student-teaching semester. For their student-teaching semester, students must register for both Education 346 (Directed Teaching) and English 359 (Seminar in Principles of and Practices in Secondary English Teaching). Before being considered for a student-teaching placement, however, students must pass all five sections of the English Department Screening Exam. This test is given in April, September, and October.

The six-course recommended program for the secondary-education English minor is as follows: 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 as follows: 200 or 220; 202; 203; 212, 310, or 311; 325 or 326; 329 or 330; 335; 313, 315, 316, or 319; an elective (excluding 100).

The recommended program for the elementary-education English minor is as follows: 200, 220, or 240; 202 or 303; 203, 313, 314, 315, or 316; 212, 310, or 311; 325 or 326; 335, 329, or 330.

A student may alter any of the recommended programs with the permission of an academic advisor. The advisors are Mr. Dale Brown, Mr. Kenneth Kuiper, Mr. William Vande Kopple, and Mr. James Vanden Bosch for the secondary-education programs; Mr. Henry Baron, Ms. Margaret Masson, Mr. Gary Schmidt, and Ms. Mary Ann Walters for the elementary-education programs; and all professors in the department for the general-major program.

An interdisciplinary minor in journalism requires Communication Arts and Sciences 230, English 260, English 360 (or 332). In addition, the student must choose three courses from the following: Art 350, 351, or 360; Communication Arts and Sciences 251, 252, or 305; English 332; Political Science 318; English 380; and such interim courses as *The Business and the Art of Publishing* and *Nazi and Soviet Propaganda*. The specific program should be designed in consultation with the advisor for this program. The advisor is Mr. Donald Hettinga.

A group minor in linguistics requires English 329, 330, Communication Arts and Sciences 150, and 307. In addition, the student must choose two electives, to be selected in consultation with the advisor for this program. The advisor 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 and S. A survey of major works of English literature from its beginnings to the late eighteenth century. *Mr. E. Ericson, Mr. J. Vanden Bosch.*

203 Survey of English Literature II. F and S. A survey of major works of English literature from the late eighteenth century into the twentieth century. *Mr. E. Ericson, Ms. M. Masson, Mr. J. Netland.*

212 American Literary Classics. F and S. A critical study of American masterpieces as the literary embodiment of the evolving American mind, culture, and values. At least eight American authors will be studied. The course is not open to students who have taken 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. *Staff.*

235 Practice in Composition. 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. *Ms. 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.* Not offered 1990-91.

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 students' understanding of cinematic language and to guide them 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. R. Anker.*

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: Contemporary Black Fiction. S. A study of several prominent contemporary black novels conducted in the context of literary traditions that have developed through slave narratives, folklore, and the black literary renaissance of the first half of the twentieth century. *Mr. D. Ward.* Offered 1990-91 only.

301 Medieval English Literature.* F. A critical study of the literature of the Anglo-Saxon and Middle English periods, excluding Chaucer. The course will analyze the literature by examining it in its cultural and historical contexts, with an emphasis on the epic, the romance, the lyric, the drama, and the histories. *Mr. G. Schmidt.*

302 Chaucer.* 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 are included. *Mr. J. H. Timmerman*. Not offered 1990-91.

303 **Shakespeare.*** F and S. A study of the major works of William Shakespeare. *Mr. L. Basney, Ms. C. Otten, Ms. M.A. Walters*.

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. C. Hodgkins*.

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. *Ms. C. Otten*.

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 writing and its cultural contexts, with detailed attention to the works and careers of Dryden, Swift, Addison, Pope, Johnson, and Boswell. *Mr. L. Basney*.

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. J. Vanden Bosch*. Not offered 1990-91.

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. Not offered 1990-91.

310 **Literature of the United States I.*** F. A survey of the literary works of the colonial and revolutionary periods. Intensive studies of the Romantic writers of the nineteenth century. *Mr. K. Kuiper, Mr. J.H. Timmerman*.

311 **Literature of the United States II.*** S. A study of the American realists and naturalists of the late nineteenth and early twentieth centuries, and the beginnings of modernism in poetry and fiction. *Ms. S. Gallagher, Mr. K. Kuiper*.

312 **Modern Literature of the United States.** S. A study of the major writers of the modern period, with emphasis on the development of modernism after World War I and on the diversity of social, regional, ethnic, and aesthetic values in American literature before 1960. Not offered 1990-91.

313 **Modern British and American Poetry.*** S. Intensive reading of selected works of major twentieth-century British and American poets before 1960. *Mr. C. Walhout*.

314 **The English Novel.*** S. A survey of the English novel from its beginnings through Conrad, with emphasis upon the art and thought of the major novelists. Special attention is paid to the development of realistic, romantic, epic, and symbolic strains in modern fiction. The course includes the reading of at least twelve novels. *Mr. D. Ward*.

315 **Modern British and American Fiction.*** F and S. Intensive reading of selected works of major twentieth-century British and American novelists before 1960. *Mr. W.D. Brown, Ms. S. Gallagher*.

316 **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. *Ms. M.A. Walters*.

319 **Recent British and American Literature.*** S. A study of short stories, novels, drama, and poetry from the sixties to the present, with attention to the evolution of postmodern forms. *Ms. C. Otten*.

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. *Ms. 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*.

329 **Linguistics.*** F and S. 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. J. Vanden Bosch.*

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.* Not offered 1990–91.

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. L. Basney.*

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.* Not offered 1990–91.

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 grammars, and an exploration of the relationships between these grammars and composition instruction and practice. *Mr. W. Vande Kopple.*

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 educa-

tion programs must take this course in the fall and Education 346 and English 359 in the spring semester. *Mr. H. Baron.*

359 Seminar in Principles of and Practices in Secondary English Teaching. S. A course in perspectives on, principles of, and practices in the teaching of English on the secondary level. This course should be taken concurrently with Education 346: Directed Teaching. Before taking English 359, students must pass the English Department Screening Exam and complete English 336, Education 301, and Education 303. Before taking English 359, students normally also complete Education 304, Education 307, and Education 308. *Mr. W. Vande Kopple.*

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 but not required as a prerequisite. *Mr. W.D. Brown.*

380 Internship in Journalism. S. A practicum permitting students to apply theoretical, technical, and ethical principles to specific journalistic activities. Students may be placed with magazines, newspapers, publishing houses, or other businesses. Each student works ten hours per week under an agency supervisor and participates in seminars on campus. Prerequisites: junior or senior status, a 2.5 college g.p.a., an average grade of 2.5 or higher in advanced writing courses taken (English 260, 332, 333, 360), and permission of the college internship supervisor. *Mr. W.D. Brown.*

390 Independent Study. F, I, S. Prerequisite: permission of the department chair.

395 Seminar: Charlotte Bronte. F. An intensive study of the writing of Charlotte Bronte. Based upon student reading and presentations, the seminar discussions will examine the significant themes, literary artistry, and social context of Bronte's work. The seminar will also consider Bronte's place in literary history, the relevance of

biographical details, and major critical evaluations of her work. *Ms. S. Gallagher.* Offered 1990-91 only.

GRADUATE COURSES

510 **Literature for the Adolescent.** 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. *Staff.*

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. *Mr. W. Vande Kopple.*

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.** 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.** A study of programs and techniques of effective teaching of language arts in the elementary school and 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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **Laughing in the Dark: Tragicomedy.** *Mr. J. Timmerman.*

W11 **South Africa in Film and Literature.** *Ms. S. Gallagher.*

W12 **Modern Poems and Ordinary Readers.** *Mr. L. Basney.*

W13 **"Beauty and Beauteous Words": The Poetry of George Herbert and Gerard Manley Hopkins.** *Mr. C. Hodgkins, Mr. J. Netland.*

W14 **Book Bashing and a Christian Aesthetic.** *Mr. H. Baron.*

W15 **Shakespeare for Teachers and Others.** *Ms. M.A. Walters.*

W16 **The Business and the Art of Publishing.** *Ms. C. Forbes.*

W17 **Flannery O'Connor: The Beginning of Vision.** *Mr. J. Johnson.*

W18 **Religion in Recent Popular Film.** *Mr. R. Anker.*

W50 **New England Saints, or Walden Revisited.** Partially off campus. *Mr. K. Kuiper, Mr. G. Schmidt.*

W51 **Grammar for Teachers and Others.** *Mr. W. Vande Kopple, Mr. J. Vanden Bosch.*

Environmental studies

SEE THE DEPARTMENT OF GEOLOGY, GEOGRAPHY, AND ENVIRONMENTAL STUDIES for a description of courses and programs of study in environmental studies.

French

Professor C.-M. Baldwin (chair)

Assistant Professors G. Fetzer, D. Traas, J. Wilkins

PROGRAMS FOR STUDENTS wishing to major in French are worked out for them individually by the department chair. 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, three of which must be literature. If approved in advance, one French interim course will count toward 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 is comprised of 201-202, 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. The elementary teacher education minor is comprised of 201-202, 215, 216, 217, and 218. In order to qualify for the teaching internship, all major and minor students are expected to pass the qualifying French language test before the end of the junior year. Students beginning their study of French in college should consult the department chair 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 foreign language 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. *Mr. G. Fetzer.*

102 **Elementary French.** S. Continuation of 101. *Mr. G. Fetzer.*

121-122-123 **Introductory and Intermediate French.** F, I, S. A closely integrated and intensive sequence involving two semesters and the interim for students who have completed two years of high school French but who are not prepared for 201. Students are assigned to this class on the basis of a

placement test administered at the time of fall registration. *Mr. G. Fetzer, Ms. D. Traas, 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. J. Wilkins.*

202 Intermediate French. F and S. Continuation of French 201. Open in the fall semester to students with two or more years of high school French, provided that placement testing indicates it to be appropriate. *Mr. J. Wilkins, Staff.*

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. *Ms. C.-M. Baldwin.*

216 Advanced Grammar and Composition. S. Systematic study of advanced grammar and composition. Conversation in small groups. Prerequisite: 123, 202, or the equivalent. *Mr. J. Wilkins.*

315 Advanced Stylistics and Phonetics. S. For the advanced student who wishes to increase fluency in oral and written French. Study of selected areas of the French language, such as advanced grammar, pronunciation, vocabulary, and stylistics, and *la dissertation*, with practice in speaking, listening, and writing. Prerequisite: 216, or permission of the instructor. *Ms. C.-M. Baldwin.*

359 Seminar in Principles and Practices in Secondary French Teaching. S. A course in perspectives on, principles of, and practices in the teaching of French on the secondary level. This course should be taken concurrently with Education 349: Directed Teaching. Before taking this course, students must pass the French Department language exam and complete Education 301 and 303. *Staff.*

LITERATURE

French 217 and 218 are normally prerequisite to all other courses in literature and civilization.

217 Introduction to French Literature. F. An introduction to the major writers and movements in French literature from the Middle Ages to the eighteenth century. Conducted in French. *Ms. C.-M. Baldwin.*

218 Introduction to French Literature. S. An introduction to the major writers and movements in French literature from the nineteenth century to the present. Conducted in French. *Ms. C.-M. Baldwin.*

311 French Drama.* F. A study of the evolution of the theater in France. Special emphasis on developmental trends from its liturgical inception through 17th century classicism. Conducted in French. *Mr. J. Wilkins.*

312 French Prose I.* F. A study of major literary works of fiction and non-fiction from the Middle Ages through the French Revolution. Conducted in French. Not offered 1990-91.

313 French Poetry.* 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. Not offered 1990-91.

314 French Prose II.* S. A study of major literary works of fiction and non-fiction from the French Revolution to the present. Conducted in French. Not offered 1990-91.

371 Literary Doctrines and Problems.* S. A study of representative literary texts in light of selected critical approaches which reflect contemporary theories and methodologies of literary criticism, such as structuralist, post-structuralist, reader-response, and psychoanalytic. Conducted in French. *Mr. G. Fetzer.*

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: La littérature fantastique en France.* An introduction to Fantastic literature in French, with focus on the 19th century short story. Conducted in French. Prerequisites: French 217 and 218, or permission of instructor. *Ms. D. Traas.*

CIVILIZATION

272 Introduction to French Culture and Civilization. F. 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 1990-91.

372 French Civilization. S. A study of France's history, geography, and its cultural traditions as they are expressed in French social customs and institutions, religious and political life and the fine arts. Major issues of contemporary French life will also be featured. Lectures and discussions conducted in French. Ms. L. Mathews.

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W50 French Interim Abroad. Off campus. Ms. C.-M. Baldwin.

W51 From Fiction to Film: French Best-sellers and Their Celluloid Progeny. Mr. J. Wilkins.

122 Intermediate French. Ms. D. Traas, Staff.

Geology, geography, environmental studies

Professors H. Aay, J. Clark, D. Young (chair)

PROGRAMS IN THE DEPARTMENT include major and minor concentrations in geology, a major and a minor in geography, a group minor in environmental studies, as well as majors and minors for teacher education programs.

Programs in geology. The major program of concentration in geology consists of 151, 152, 201, 202, 212, and four additional courses approved by the advisor. 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, 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.

Teacher education programs in geology. The geology-earth science major for teacher education consists of 151, 152, 201, 202, 212, Astronomy 110 or 201, and three and one-quarter course units chosen from among Geology 301, 302, 304, 311, 313, 314, 321, 331, Environmental Studies 202, and an approved elective. The education minor consists of 151, 152, 201, 212, Astronomy 110 or 201, and one course unit chosen from among those listed for the major. The teacher education advisor is Mr. James A. Clark.

Students must have completed at least two 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, 152, 201, 212, and two additional courses approved by the advisor.

Group majors consisting of geology and chemistry, engineering, or physics are also available.

Programs in geography. The major program of concentration consists of 100, 101 or 110, 201, 210, 310, 311, and three courses from 113, 250, 320 (Aquinas College), 321, 390, 395, and courses approved by the program advisor, Mr. Henk Aay. Mathematics 143 is a required cognate.

The minor concentration consists of 100, 101 or 110, 201, 210, 310, plus one additional course approved by the advisor.

Teacher education programs in geography. The minor for the elementary education program consists of 100, 101 or 110, 201, 210, 310, plus one additional course approved by the advisor.

The major for secondary education consists of 100, 101 or 110, 201, 210, 310, 311, plus three additional courses. Social studies group majors may take a three-course sequence consisting of Geography 101 or 110, 210, and 310.

All those in the elementary education program must take Geography 101 or 110.

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 group minor consists of three required courses, Environmental Studies 201, 202, and 395; two courses chosen with the approval of the program advisor from among: Biology 114, 116, 234, 311S, 352, Chemistry 110, Environmental Studies 385, Economics 332, Geography 100, 101 or 110, 210, 250, Geology 103, 151, 311, Sociology 308, or approved interim courses; and one additional elective approved by the advisor, Mr. Henk Aay. Many courses offered at Au Sable Trails Institute of Environmental Studies may also serve as electives in the program.

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.

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 chairs 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 soci-

eties—past and present—have used, affected, and transformed their natural settings are examined. Not open to freshman students. (Also listed as Geography 201)
Mr. U. Zylstra.

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 freshman students. *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. Prerequisites: Environmental Studies 201 and 202 or permission of the instructor. *Mr. H. Aay.*

GEOGRAPHY

100 Earth Science. S. 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. (Also listed as Geology 100) *Mr. J. Clark.*

101 Introduction to Geography. 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.*

110 World Regional Geography. F. An analysis of the Earth's principal culture regions from a geographic perspective: Europe, U.S.S.R., Middle East, East, South and South-East Asia, Australia and New Zealand, Oceania, and South, Central, and North America. These areas will be examined in the light of several foundational geographic themes: the locational organization of physical and cultural features; society-land relationships, cultural landscapes, and patterns of spatial interaction among and within regions. *Mr. H. Aay.*

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 freshman students. (Also listed as Environmental Studies 201.) *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.*

250 Meteorology. I, even-numbered years. Meteorology is the science that deals with the atmosphere, weather, climate, and weather forecasting. This course deals with the first three of these aspects of meteorology. Major components include: 1) consideration of the weather conditions that make up climate: temperature, solar radiation, clouds, precipitation, air pressure, and winds; 2) study of natural factors that influence weather conditions: altitude, latitude, and proximity to bodies of water and to mountains; and 3) description of climate with respect to the Earth as a whole, North America, and the Great Lakes Region. Some time is devoted to consideration of man's impact on climate through atmospheric pollution, and to the impact of climate on human civilization. Lecture, discussion, activities in observation and in weather map reading. Prerequisite: Geography 100 or high school chemistry or equivalent. Not offered 1990-91.

310 **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 politics are examined. Prerequisite: 101 or one social science course. Not offered 1990-91.

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 or 100. (Also listed as Geology 311) Not offered 1990-91.

320 **Cartography: Map Making and Interpretation.** Aquinas College course. F. Cartographic design with emphasis on developing ability to communicate through maps and graphs; some computer graphics.

321 **Glacial Geomorphology 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. Laboratory and field trips. Prerequisite: 311. (Also listed as Geology 321.) Not offered 1990-91.

390 **Independent Study.** F, I, S, full or half course. The independent study of a subdiscipline or topic in geography not included in the regular curriculum. Prerequisite: permission of the department. *Staff.*

395 **Research in Geography.** F, I, S, full or half course. Field or library research on an approved geographical problem and presentation of the results of this research in a seminar. Open to qualified students by permission of the department. *Staff.*

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 and processes affecting earth's surface; earth's atmosphere and weather processes; and the oceans. Laboratory. (Also listed as Geography 100) *Mr. J. Clark.*

103 **Humanity 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. D. Young.*

151 **Introductory 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; surface processes producing landforms; 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. Prerequisites: 151 or 103 and permission of instructor. *Mr. D. Young, J. Clark.*

201 **Mineralogy.*** S. 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: 151 and Chemistry 103. Not offered 1990-91.

202 **Optical Mineralogy.*** F, 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. Not offered 1990-91.

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.*** S. 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. Not offered 1990-91.

302 **Sedimentology.*** F. 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; correlation and classification of rock strata; and applications to groundwater and fossil fuel industries. Laboratory, field trip. Prerequisite: 202. *Mr. J. Clark.*

304 **Geochemistry.*** S. 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. Not offered 1990-91.

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 or 100. (Also listed as Geography 311) Not offered 1990-91.

313 **Paleontology.*** F. A study of organisms that once lived on the Earth. Includes an examination 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. Laboratory, field trip. Prerequisite: 152 or Biology 232. *Mr. C. Menninga.*

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. Not offered 1990-91.

316S **Field Geology.** Summer only. Introductory field geology. Offered as a summer course at Au Sable Trails Institute of Environmental Studies located near Mancelona, Michigan. *Mr. J. Clark.*

321 **Glacial Geomorphology 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. Laboratory and field trips. Prerequisite: 311. (Also listed as Geography 321) Not offered 1990-91.

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*

359 **Seminar in Secondary Geology-Earth Science.** S. A course in perspectives on, principles of, and practices in the teaching of Geology-Earth Science on the secondary level. This course should be taken concurrently with Education 349. The seminar provides a forum for the discussion of concerns that develop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in Geology-Earth Science.

390 **Independent Study.*** F, I, S, full or half course. Prerequisite: permission of the 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 environ-

mental 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 the 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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **Geology of the National Parks.** *Mr. D. Young.*

W11 **Society and Environment: A Geography of the Netherlands.** Off campus. *Mr. A. Aay, Mr. A. Leegwater.*

W12 **Geology of New Zealand.** Off campus. *Mr. C. Menninga.*

W13 **Cartography, Communities, and Computers: Modern methods in Resource Management and Urban Planning.** *Mr. J. Clark.*

German

Professors W. Bratt, B. Carvill (chair, Department of Germanic Languages), C. Hegewald, J. Lamse

PROGRAMS FOR STUDENTS wishing to major in German are worked out for them individually by departmental advisors 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 300-level literature courses. Six-course minors must include 215. The nine-course teacher education major must include 215, 216, and two 300-level literature courses. Prior to the teaching internship which is offered only during the spring semester, students must pass a German language test given at the end of the spring

semester one year prior to the student internship. The elementary teacher education minor must include 215, 216, and four additional approved courses. The teacher education advisor is Ms. B. Carvill.

Calvin-sponsored programs are available in Germany and Austria for the interim, a semester, the academic year, or the summer. Students interested in such programs should work out the details with the department chair and the registrar.

The fine arts core may be met by German literature courses numbered 217 and above.

LANGUAGE

101 **Elementary German.** F. An introductory course in the comprehension and use of spoken and written German as well as an exposure to the cultures of the German-speaking countries. *Ms. B. Carvill.*

102 **Elementary German.** S. Continuation of 101. *Ms. B. Carvill.*

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. *Mr. W. Bratt.*

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. *Mr. J. Lamse.*

315 **Advanced Grammar and Stylistics.** F. For the advanced student who wishes to increase fluency in oral and written German. Study of selected areas of the German language, such as advanced grammar, pronunciation, vocabulary, and stylistics, with practice in speaking and writing. Prerequisite: 216 or permission of the instructor. *Ms. 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. W. Bratt.*

250 **German Civilization.** F, 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 1990-91.

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 prose fiction 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*. Not offered 1990-91.

306 Literature of the German Democratic Republic.* F, even years. A survey of East German literature from its beginnings in the late 1940s 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 literature from 1890 to 1940, with special emphasis on the works of Th. Mann, Kafka, Hesse, and Brecht. Lectures, discussions, and assigned papers. Prerequisite: 217, 218, or permission of the instructor. *Ms. B. Carvill*.

308 Literature of the Federal Republic of Germany. S, odd years. Readings in German literature from 1945 to the present from such writers as W. Borchert, Frisch, Böll, and M. Walser. Lectures, discussions, and assigned papers. Prerequisite: 217, 218, or permission of the instructor. *Ms. B. Carvill*.

359 Seminar in Principles and Practices in Secondary German Teaching. S. A course in perspectives on, principles of, and practices in the teaching of German on the secondary level. This course should be taken concurrently with Education 349:

Directed Teaching. Before taking this course, students must pass the German Department language exam and complete Education 301 and 303.

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 department chair. *Staff*.

395 Seminar.

CIVILIZATION

361 Introduction to Modern German Culture. S. A survey of the German cultural tradition of this century as it finds expression in the various arts, with particular emphasis on films and 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. C. Hegewald*.

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W50 German Interim Abroad — 1991. Off campus. *Mr. W. Bratt*.

IDIS W11 Folklore of Many Lands. *Mr. C. Hegewald*.

IDIS W14 Japanese Films/Japanese Society. *Mr. L. Herzberg*.

Greek

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

History

*Professors R. Bolt, J. Bratt, H. Brinks, †B. De Vries, D. Diephouse (chair), W. Doezema, F. Roberts, D. Van Kley, **E. Van Kley, †R. Wells*

Associate Professor D. Miller,

Assistant Professors D. Howard, R. Sweetman, W. Van Vugt

Instructor E. Ericson III

PROGRAMS FOR STUDENTS majoring in history will be worked out for them by departmental advisors. Such programs will reflect the students' interests both within the field of history and in related departments, their anticipated vocational goals, 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 advisors 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 or 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, 208, 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 teacher education minor is 101 or 102; 211 or 215; one course from 201–208; one course from 301–312; 320; and an approved interim or semester course. 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. Daniel Miller.

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 an additional requirement in the contextual disciplines.

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. Not open to juniors or seniors except by permission. *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. Not open to juniors or seniors except by permission. *Staff.*

102 **Honors Western Civilization.** F and S, core. The 1990-91 topic will be a study of marriage and family in Christian society, 200-1500 A.D. The course will focus on a number of ancient and medieval treatises which define and describe the "Christian family." With the aid of modern historical scholarship, these ideal constructs of the family will be placed in social and historical context; students will examine the relationship of family to politics, economy, religion, gender, and personal identity, and will explore the ways in which these relationships changed over time. *Mr. R. Sweetman.*

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. *Mr. D. Howard.*

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

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 supple-

mented 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. Not offered 1990-91.

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: precolonial 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 1990-91.

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 struggle for independence, neo-colonialism, and the origins of contemporary social, economic, and political problems in the new states of the area. Not offered 1990-91.

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.*

208 **National Histories of Latin America.*** S. A detailed analysis of the history of a single Latin American nation with special attention to those characteristics that make it unique within the Latin American context. The topic for 1990-91 will be Brazil. *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, Mr. W. Van Vugt.*

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. W. Van Vugt.*

215 **Canada.*** F. A tracing of the founding and character of New France followed by a careful examination of nineteenth- and twentieth-century Canada. Not offered 1990-91.

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

220 **France.*** F. The history of modern France from roughly 1715 to the present, with some initial attention given to the nation's medieval and early modern origins. The course will especially emphasize those aspects of the French historical experience which thrust France into the cultural vanguard during the nineteenth and early twentieth centuries: namely, the invention of "revolution" as a mode of historical change, the audacious experiment with "dechristianization," the attempt to create a purely secular national community, and the quest for social equality. The centrality of the French Revolution to the national identity will everywhere be underscored. The course will make extensive use of nineteenth-century novels, such as Stendhal's *The Red and the Black* and Flaubert's *The Sentimental Education*. Not offered 1990-91.

221 **The Netherlands.*** S. An introduction to the history of the Netherlands from medieval 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.*** F. A survey of German history with particular attention given to the period from the Reformation to the present. Included in the course are medi-

eval 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. D. Diephouse.*

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. G. Harris, Mr. R. Sweetman.*

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. R. Sweetman.*

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. E. Van Kley.*

304 **Early Modern Europe.*** S. A topical approach to the history of Europe from roughly 1618 to 1799, that is, from the Thirty Years' War through the French Revolution. The course will analyze the components of the "general crisis of the seventeenth century," the origins and characteristics of the eighteenth-century Enlightenment, and the intellectual and political origins of the French Revolution. The readings will be from both secondary texts and primary sources; a carefully delimited paper based on primary source material will be required. *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. Bratt.*

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. W. Van Vugt.*

312 Twentieth-Century United States.* F and S. A study of politics, diplomacy, labor, industry, and scientific achievement since the 1890s 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

219 Studies in Comparative History: Themes in British and American History. S. The method of this course is comparative, which means that historical themes from both Britain and America will be explored in order to make more meaningful judgments about historical issues com-

mon to both nations. Taught in London, England, it will integrate experience with traditional academic study. Prerequisite: History 101 or 102. A college-level course in British or American history is desirable but not required. Not offered 1990-91.

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. J. Bratt.*

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. Not offered 1990-91.

359 Seminar in the Teaching of History and Social Studies on the Secondary Level. F and S. This course is designed to assist student teachers in developing appropriate goals and effective methods of teaching history and social studies at the high school and junior high level. The seminar also provides a forum for the discussion of problems that develop during student teaching. Prerequisites: concurrent enrollment in Education 349 and a history major or a social studies group major.

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. W. Doezema.*

380 Field Work in Middle East Archaeology. Summer. 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. Special arrangements should be made with the department chair. *Mr. B. De Vries.*

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

395 **Seminar in History.*** F and S. 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. D. Miller.*

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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **Search for the Historical Muhammad.** *Mr. D. Howard.*

W11 **The Crucial Decade plus Five Years: The United States from 1945 through 1960.** *Mr. R. Bolt.*

W50 **Doxology and Discord: Christian Liturgy in a Changing World.** *Mr. D. Diephouse.*

W51 **A History of U.S. Policy in Latin America.** *Mr. D. Miller.*

W52 **Religion, Commerce, and Reform in Antebellum America.** *Mr. J. Bratt.*

Latin

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

Mathematics

Professors J. Bradley, D. Brink, T. Jager, †G. Klaasen, J. Koop, D. Laverell, S. Leestma, L. Nyhoff, C. Sinke, M. Stob, G. Van Zwalenberg, G. Venema, (chair, Department of Mathematics and Computer Science), P. Zwier
Associate Professor E. Fife, G. Talsma, X. Ye
Assistant Professor J. Ferdinands
Instructor B. Ritsema

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, 162, and an approved interim course. The remaining six 200- and 300-level courses are selected with the approval of the student's advisor. Computer Science 151 is a required cognate. Education 356 substitutes for the 391 required in other major programs. The secondary teacher education minor consists of 161; 162; two from 243, 255, 261; 321; and 351. The elementary teaching minor consists of 110, 143, 221, 222, 223; one course from 132 or an approved interim; and one from CPSC 100 or 151.

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 chairs 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, 131, 143, 155, 161, or 221.

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. Prerequisite: one year of algebra and one year of geometry. *Staff.*

110 **Elementary Functions.** F and S. 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 logarithmic functions. Prerequisite: one year of algebra and one year of geometry. *Staff.*

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: one year of algebra and one year of geometry.

132 **Calculus for Management, Life, and Social Sciences.** F and S. Functions, limits, derivatives. Applications of derivatives to maximum-minimum problems; exponential and logarithmic functions; integrals; functions of several variables. Not open to those who have completed 161. Prerequisite: 131 or 143 or permission of instructor. *Staff.*

143 **Probability and Statistics.** F and S, core. An introduction to the concepts and methods of probability and statistics. The course is designed for students interested in the application of probability and statistics in business, economics, and the social and life sciences. Topics include descriptive statistics, probability theory, random variables and probability distributions, sampling distributions, point and interval estimation, hypothesis testing, analysis of variance, and correlation and regression. Prerequisite: one year of algebra and one year of geometry. *Staff.*

161 **Calculus I.** F, I, and S, honors section, core. Functions, limits, derivatives, applications 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.*

221 **The Real Number System and Methods for Elementary School Teachers.** F and S, core. This course provides prospective

elementary school teachers with background needed for teaching elementary mathematics. Both content and methodology relevant to school mathematics are considered. Topics covered include the real number system and its subsystems. Pedagogical issues addressed include the nature of mathematics and of mathematics learning, and the role of problem solving and the impact of technology in the elementary school mathematics curriculum. Students will not receive credit for both this course and 100. Prerequisites: a year of algebra and a year of geometry in high school.

222 **Geometry and Methods for Elementary School Teachers I.** F and S, half course. This course is a continuation of 221. It considers both content and methodology relevant to teaching elementary geometry. Topics covered include basic geometric concepts in two and three dimensions, transformations in the plane, and measurement. Pedagogical issues addressed include the role of geometry in the elementary school curriculum, applications of computers to geometry, and the importance of problem solving. Prerequisite: 221 or permission of instructor.

223 **Geometry for Elementary Teachers II.** S, half course. A study of selected topics in geometry, including microcomputer applications using LOGO. An in-depth study of some of the topics introduced in 222. Prerequisite: 222.

231 **Differential Equations with Linear Algebra.** F and S. Solutions and applications of first and second order ordinary differential equations. Laplace transforms. Elementary linear algebra. Systems of linear differential equations, numerical methods, non-linear equations. Prerequisites: 162 and experience in computer programming. *Staff, mates, 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. C. Sinke.*

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 esti

255 **Applied Linear Algebra.** F and S. Matrices, row operations, systems of linear equations, pivoting strategies, vector spaces,

linear independence, dimension, orthonogonality, determinants, eigenvectors and eigenvalues. Emphasis on computations with matrices. Prerequisites: 162 and either Computer Science 141 or 151.

261 Multivariate Calculus. F and S, honors section. 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. *Staff.*

333 Partial Differential Equations. F. Methods for solving heat, wave, and potential equations, Fourier series, orthogonal functions, Sturm-Liouville problems, separation of variables, Fourier transforms, Green's functions, numerical methods. Intended for students in engineering, the physical sciences, and applied mathematics. Prerequisites: 231 and 261. *Mr. G. Venema*

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. T. Jager.*

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. T. Jager.*

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 decompositions, canonical forms for matrices. Prerequisite: 351. *Mr. P. Zwier.*

359 Seminar in Secondary Teaching of Mathematics. F. A course in perspectives on, principles of, and practices in the teaching of mathematics on the secondary level. This course should be taken concurrently with Education 349. The seminar provides a forum for the discussion of concerns that develop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in mathematics.

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.

362 Real Analysis II.* S. A continuation of 361. Sequences and series of functions, functions of several variables, Lebesgue integration. Prerequisite: 361.

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. *Staff.*

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.

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 department chair. *Staff.*

391 **Colloquium.** F and S, no credit. 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. *Staff.*

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

JANUARY 1991 INTERIM

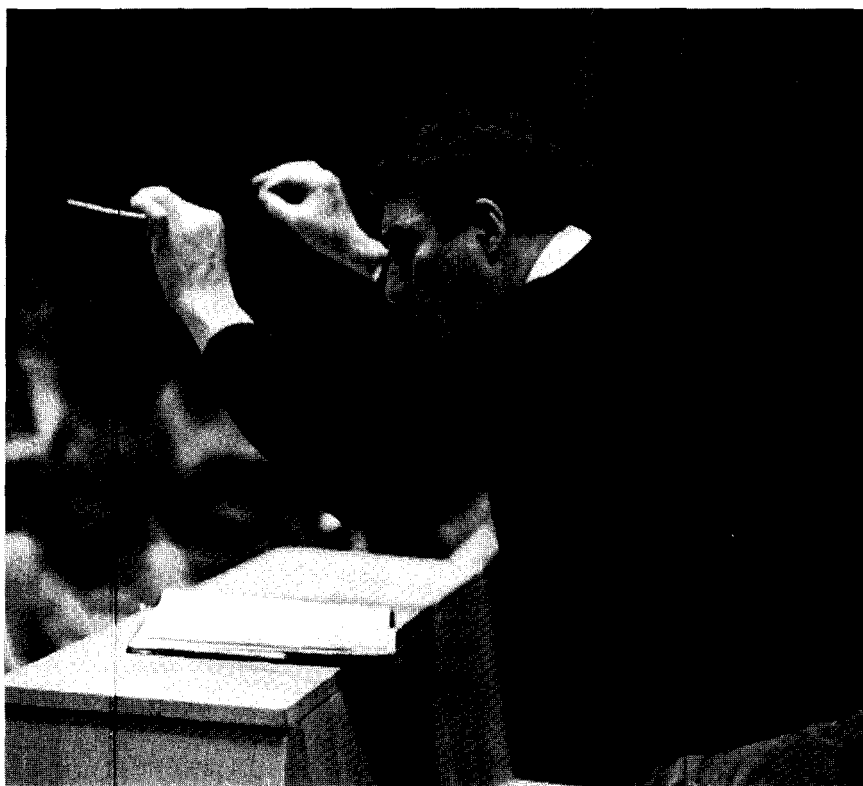
A catalog with the descriptions of all interim courses is available after October 1990.

W10 **The Analytical Engine.** Mr. S. Leestma.

W11 **The World According to Mathematics.** Mr. W.D. Laverell.

W50 **Number Theory: Classical and Computational.** Mr. E. Fife, Mr. P. Zwier.

IDIS W12 **Mission and Service in Haiti.** Off campus. Mr. J. Bradley, Mr. R. Van An del.



Music

Professors D. De Young, J. Hamersma (partial leave all year), H. Slenk, C. Stapert, D. Topp, J. Worst (partial leave all year)
Associate Professors T. Huizenga, C. Kaiser, M. Mustert, R. Rus
Assistant Professor C. Baker

WITHIN THE LIBERAL ARTS FRAMEWORK, the Music Department addresses itself to students majoring in music, to general students wishing to increase their understanding and enjoyment of music through study, and to the campus community. Students can major in music by following one of the programs of study outlined below, fulfill a fine arts core requirement by taking one of the specified core courses, or take any course for which they are qualified. In addition, any qualified student may participate in one of the many performing ensembles or take private lessons. All students, as well as the general public, are welcome at the frequent concerts sponsored by the Music Department.

The Music Department offers a variety of programs of study leading to the Bachelor of Arts degree. Each of the programs builds on most or all of a central core of new and basic courses approved for implementation beginning in the 1990–91 school year. For admission to a program of study, students must complete 105, 108, 112, and 116 with a minimum grade of C (2.0) in each. Applicants will be informed of the department's action within a month after completing these courses.

Basic courses in music. Most of the programs listed below require the following ten basic courses (totalling eight course units): 105, 108, 112, 116, 205, 206, 207, 208, 305, and 308.

The Liberal Arts major in music. This major in music leading to the Bachelor of Arts degree consists of a survey of the structure and history of music. It is comprised of nine courses: either the ten basic courses (105, 108, 112, 116, 205, 206, 207, 208, 305, and 308) and one course unit in applied music or 105, 108, 112, 116, 205, 206, 207, 241; one from 236, 311, 312, 313, 315, or 317; one course in applied music, and a half-course elective. Mr. John Worst is the advisor for this program. Students with more specialized interests in music are advised to follow one of the programs described below.

Programs for students planning graduate work in music. Students wishing to pursue graduate study in music, but not in education, are advised to choose one of three programs: Music History, Theory and Composition, or Applied Music. Each program requires the ten basic courses (105, 108, 112, 116, 205, 206, 207, 208, 305, and 308), eight semesters of 180, and eight semesters of ensemble (101, 111, 121, 131, 141, 151, 161, or 171). In addition, students elect four courses from one of the following areas: *Music History* — 311, 312, 313, and an approved interim course (Mr. John Worst, advisor); *Theory–Composition* — 311, 312, and two from 315, 316, or 317 (Mr. John Worst, advisor); *Applied Music* — eight semesters of 210, 220, 230, 240, 260, or 270, including a solo recital (Ms. Ruth Rus, advisor). Applied Music students are allowed to begin their programs with

one or two semesters of lessons at the one hundred level before beginning concentrate lessons at the two hundred level.

Secondary education programs. Two thirteen-course concentrations, although earning secondary teaching certificates, enable students to teach music at any level grades K-12. These programs require the ten basic courses, (105, 108, 112, 116, 205, 206, 207, 208, 305, and 308), 180 each semester, 237, 339, plus four course units from one of the following concentrations: *Instrumental music*, three from 195, 196, 197, and 198 (excluding the course that includes the student's major instrument, which course then becomes a recommended elective), 337, four semesters of 140, 150, 160, or 170; and four semesters of 161 or 171 (Mr. Derald De Young, advisor), or *Vocal Music*, one from 236, 311, 312, 313, 315, 317, or an approved interim; 338, two semesters of: 110 or 210, 120 or 220, 160 or 260 (guitar only); four semesters of 130 or 230; and four semesters of 101, 111, 131, or 141 (Mr. Merle Mustert, advisor).

In addition to this thirteen-course concentration in music, these secondary education 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 also are advised to complete a minor in another department if possible. These 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 (which counts as the sixth course in the contextual disciplines for secondary music education majors only), Music 302 (which counts for Education 303), and Music 359.

These are the appropriate programs for students desiring to pursue graduate work in music education. Students in this program must pass a comprehensive screening test in music theory and history, which is given each April. They should take the test during the semester in which they are enrolled in Music 308.

The seven-course secondary education teaching *minor* includes 105, 108, 112, 116, 233, 234, 237, 339, two semesters of 110, 120, or 160 (guitar), one semester of 130, one semester of ensemble (101, 111, 131, 141, 151, 161, 171), and a half-course elective in music (Mr. Merle Mustert, advisor).

Elementary education programs. A ten-and-one-half course *major* concentration qualifies graduates to teach any subject in a self-contained classroom *and* to teach music in grades K-8. The program requires nine of the ten basic courses (105, 108, 112, 116, 205, 206, 207, 208, and 305), 237, 238, two semesters of: 110 or 210, 120 or 220; two semesters of 130 or 230; two semesters of 101, 111, 131, or 141; and a half-course elective in music (Mr. Howard Slenk, advisor). Students in this program must pass a comprehensive screening test in music, which is given each April. They should take the test during the semester after which they have completed Music 305.

A seven-course *minor* concentration also prepares students to teach music and in a self-contained classroom. This program includes 105, 108, 112, 116, 233, and 234, 237, 238, two semesters of ensemble (101, 111, 131, or 141), and two semesters of private lessons (110, 120, 130, or 160 — guitar) (Ms. Trudi Hui-zenga, advisor).

Elementary education students also may complete a five-course sequence in music as part of a Fine Arts *major* concentration — 105, 233, 234, 237, 238, and a half-course of applied music — or a three-course sequence in music as part of either a Fine Arts *major* or *minor* — 105, 233 or 234, and 238 (Ms. Trudi Hui-zenga, advisor).

Note concerning all music education programs: In order to meet the credit requirements for state certification, students who take 101 or 111 rather than 131 or 141 will need to complete additional electives in order to reach the required total course units.

Programs for students interested in church music. Students preparing for work in church music may choose to focus either on organ or choir. Each program includes the ten basic courses, (105, 108, 112, 116, 205, 206, 207, 208, 305, and 308), 236, and 237. In addition, students elect five and one-half courses from one of the following areas: in *Organ* — 110 (first two semesters), 210 (six semesters including some directed field work and a public recital with scores), two semesters each of 130 and ensemble (101, 111, 131, or 141), and an interim in church organ music (Mr. John Hamersma, advisor); in *Choir* — six semesters of 130, two semesters of 110 or 120, 337 and 338, six semesters of choir (101, 111, 131, or 141) a half-course elective in music, and an interim in church choir music which includes some directed field work and a public choral recital (Mr. Howard Slenk, advisor). A church music minor also is being developed and should be available for the 1990-91 school year.

General regulations. Mr. Calvin Stapert is the advisor for general, undecided students considering a major in music. Mr. Dale Topp counsels undecided students considering a major or minor in music education. All *transfer* students must consult with Mr. John Hamersma at or before their first registration to receive counseling into an appropriate sequence of music courses. Such students also must validate, during their first semester at Calvin, their transfer credits in keyboard harmony with Ms. Marilyn Slenk and their transfer credits in aural perception with Ms. Ruth Rus. Those not meeting minimum standards will be required to enroll in 112 or 116.

Core courses in music. Students with any possible plans concerning further music study should enroll in 105 as their fine arts core course, for this class provides counsel about the various programs and the individual student's qualifications for each. Other music options for students with some musical background who desire core credit include 233 and 234. Students with more limited musical experiences may prefer 133, 236, or 241 as their core course elective in music. Music 238 earns core credit for elementary education students only.

GENERAL AND CORE COURSES

105 **Introduction to Music.** F, core. New. A broad introduction to the art of music. The course will introduce students to a wide variety of musical repertory and to rudimentary theory and technical vocabulary. The course also aims to introduce students to fundamental issues about music in society and, in relation to those issues, to develop their understanding of selected

pieces of music. Prerequisite: the ability to read music in at least one clef. Ms. T. Hui-zenga, Mr. H. Slenk, Mr. C. Stapert, Mr. D. Topp.

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 musical background. Following a brief introduction for all students, each student will elect five brief units from a

choice of various historical eras and musical types. Each unit ends with a test of assigned readings and listening. *Ms. C. Baker, Ms. T. Huizenga, Mr. C. Kaiser.*

233 Basic Music History 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 chant and the principal repertoires of polyphony through the Baroque period. *Mr. M. Mustert.*

234 Basic Music History II.* S, core. A survey of the stylistic development and the cultural context of the art of music from the Classical period to the present. The class will study representative works of major composers. *Staff.*

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 music showing their roots in European art music and in American folk music, particularly country music, folk music, blues and jazz, popular music theater, and rock. *Mr. W. Romanowski.*

BASIC COURSES

The following new courses form the heart of the revised curriculum in the Music Department and are listed with the expected year of their first offering as well as the semester of the typical availability.

108 Music Theory S, 1991. A study of tonal harmony covering triads, inversions, non-harmonic tones, cadences, dominant seventh chords, non-dominant seventh chords, and secondary dominants. Prerequisite: 105.

112 Aural Perception. S, 1991, 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 tone; also major, minor,

and modal scales and melodic dictation. 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 108. Prerequisite: 105. (Note: This course is nearly identical with the old 123 and may be substituted for it by any students involved in the old curriculum.) *Ms. R. Rus.*

116 Keyboard Harmony. S, 1991, 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 108. Prerequisites: 105, and piano skills (ordinarily about one year of piano study). Others will be required to take remedial piano. (Note: This course is nearly identical with the old 113 and may be substituted for it by any students involved in the old curriculum.) *Ms. M. Slenk.*

205 Music History I. F, 1991. A study, via listening, score study, and source readings, of music of Western civilization prior to 1750. After a brief introduction to world music, the course continues with study of musical thought in antiquity and the early Christian era, Gregorian chant, and the principal repertoires of polyphony through the Baroque period. Prerequisites: 105, 108, 112, 116 or permission of instructor. To be taken concurrently with 207. *Staff.*

206 Music History II. S, 1992. A continuation of Music History I. This course is a study of music of Western civilization from 1750 to 1950. The course emphasizes the relationship of music to cultural and intellectual history, beginning with the impact of Enlightenment thought on music, continuing with the Romantic revolution, and concluding with the various 20th century continuations of, and reactions to, Romanticism. Prerequisites: 205 and 207 or permission of instructor. To be taken concurrently with 208. *Staff.*

207 Music Theory II. F, 1991. A continuation of Music Theory I covering irregular resolutions, modulation, borrowed chords, augmented sixth chords, the Neapolitan sixth chord, and the diminished seventh chord. In addition to part-writing and analysis, this course includes ear training and keyboard harmony. Prerequisites: 105, 108, 112, 116. To be taken concurrently with 205. *Staff.*

208 Music Theory III. S, 1992, half-course. A continuation of Music Theory II covering chromatic third-relation harmony, modulation to foreign keys, extended tertian harmonies, and a brief introduction to post-tonal techniques. To be taken concurrently with 206. Prerequisite: 207. *Staff.*

305 Music History III. F, 1992. A continuation of Music History II. The course is a study of Western fine art music since 1950, non-Western music as it interacts with the Western musical tradition, and Western (especially American) popular music and its interaction with both of the above. Topics include: electronic and computer music, aleatoric and avant-garde music; traditional and modern music of Africa, the Orient, Eastern Europe, the Near East; Amer-Indian music, music and technology; rock music, and the formation of a youth subculture. Prerequisites: 206 and 208 or permission of the instructor. *Staff.*

308 Analysis and Criticism. S, 1993. An in-depth analysis of a variety of musical works representing at least one non-Western culture, at least one contemporary popular style, and the major historical style periods of Western art music. The analysis will be done not only by studying each piece "in terms of itself" but also "in the context." Students will be exposed to a variety of analytical methods and the assumptions behind them. They will also be encouraged to go beyond analysis to evaluation. *Staff.*

Note: As part of the old curriculum, the following basic courses eventually will be phased out. Note the dates given as to when each will be offered.

113 Keyboard Harmony I. F, 1990, 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 (ordinarily about one year of piano study). Others will be required to take remedial piano. *Ms. M. Slenk.*

114 Keyboard Harmony II. S, 1991, 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. Prerequisite: 113. *Ms. M. Slenk.*

123 Aural Perception I. F, 1990, 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. *Ms. R. Rus.*

124 Aural Perception II. S, 1991, 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 studied in 123. Prerequisite: 123. *Ms. R. Rus.*

203 The Literature and Materials of Music III. F, 1990. A continuation of 104. A study of the music of the Romantic era. Assignments include composition, analysis, a book review, and a demonstration project in class. 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, 1991. 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, 1990, 1991, quarter course. A continuation of 114. To be taken concurrently with 203. Prerequisite: 114. *Ms. M. Slenk.*

214 Keyboard Harmony IV. S, 1991, 1992, quarter course. A continuation of 213. Prerequisite: 213. *Ms. M. Slenk.*

223 Aural Perception III. F, 1990, 1991, quarter course. A continuation of 124. To be taken concurrently with 203. Prerequisite: 124. *Ms. R. Rus.*

224 **Aural Perception IV.** S, 1991, 1992, quarter course. A continuation of 223. Prerequisite: 223. *Ms. R. Rus.*

303 **The Literature and Materials of Music V.*** F, 1990, 1991. 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, 1991, 1992. A continuation of 303. A study of the Western music of the late Renaissance and early Baroque eras. Prerequisite: 303. *Mr. C. Stapert.*

ADVANCED COURSES

237 **Conducting.** S, half course. A course in basic, general conducting, normally taken in the sophomore year. Prerequisite: 103. *Mr. M. Mustert.*

311 **Vocal Polyphony of the Renaissance.*** S. A study of the vocal style of Palestrina. Exercises in modal counterpoint. Listening repertory of compositions. Prerequisite: 203 or 205 and 207. *Staff.*

312 **Instrumental and Vocal Polyphony of the Late Baroque.*** F. A study of contrapuntal practice of late Baroque composers, principally J. S. Bach. Exercises in tonal counterpoint. Listening repertory of compositions. Prerequisite: 203 or 205 and 208. Not offered 1990-91. *Staff.*

313 **Studies in Music History.** Not offered 1990-91.

315 **Arranging, Orchestration, and Scoring.*** F. Survey of the history of the orchestra and orchestration, and problems involved in writing for orchestra, band, and small ensembles. A study of the technical capabilities of each instrument. Projects written by class members will be performed by department organizations whenever possible. Prerequisite: 108. *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: 108 or permission of the instructor. May be repeated for credit as often as a student's schedule allows. Performance of student works is required. *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.*

338 **Choral Conducting.*** F, half course. A course in advanced conducting techniques appropriate to choirs. Students will be required to attend some Monday evening rehearsals of the Oratorio Society. Prerequisite: 237. *Staff.*

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 required of all elementary education students. Not open to freshman students. *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. *Mr. D. Topp.*

359 **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 **Harpsichord.** Quarter course. Individual lessons in harpsichord. *Staff.*

110 **Organ.** Quarter course. Individual lessons in organ emphasizing skills for the church organist. *Ms. S. Boomsma, Mr. J. Hamersma, Mr. J. Tuuk.*

120 **Piano.** Quarter course. Individual lessons in piano. *Ms. B. Mustert, Ms. R. Rus, Ms. L. Vanden Berg, Mr. R. Ridenour.*

130 **Voice.** Quarter course. Individual lessons in voice. *Ms. D. De Boe, Ms. T. Haan, Ms. T. Huizenga, Mr. C. Kaiser.*

140 **Brasses.** Quarter course. Individual lessons in trumpet, horn, euphonium, trombone, or tuba. *Mr. D. De Young, Staff.*

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. *Ms. C. Baker, Mr. P. Vondiziano, Staff.*

170 **Woodwinds.** Quarter course. Individual lessons in flute, oboe, clarinet, bassoon, saxophone, or recorder. *Mr. M. Colley, Ms. D. Dugan, Mr. J. Varineau, Staff.*

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. *Ms. 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, Staff.*

260 **Advanced Strings.** Half course. Individual lessons for the music major concentrating in violin, viola, violoncello, bass viol, or classical guitar. *Ms. C. Baker, Mr. P. Vondiziano.*

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. *Ms. C. Baker.* Not offered 1990-91.

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. *Mr. D. De Young.* Not offered 1990-91.

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.*

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.*

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 **Meistersingers** (formerly Men's Choir). F and S, quarter course for two semesters. An ensemble devoted to singing a wide variety of literature suitable to the college male glee club. Open to the general college student. *Mr. M. Mustert.*

111 **Lyric Singers** (formerly Women's Choir). F and S, quarter course for two semesters. An ensemble of treble voices devoted to singing a wide variety of literature, both sacred and secular. Emphasis is given to three- and four-part singing, voice development and preparation for performances. Open to the general college student. Freshman women who wish to sing in a choir will normally be required to sing in the Lyric Singers. *Mr. M. Mustert.*

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 traditional chamber ensembles such as string quartet. These are open to members of band and orchestra who meet the requirements of instrumentation and the demands of musicianship. *Ms. C. Baker, Mr. H. Slenk, Staff.*

131 **Campus Choir.** F and S, quarter course. Representative works in the field of choral literature are studied and sung. Emphasis is given to the development of singing and sight-reading skills as well as to regular performances. Membership is maintained as a set limit. It is open to all students who meet the requirements of voice and musicianship and is normally limited to those with less than two years of experience in college choirs. Students with more experience will be eligible with the permission of the director and the department chair. *Mr. H. Slenk.*

141 **Capella.** F and S, quarter course. Representative works in the field of choral literature are studied and 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. Normally one year of experience in a college choir is required. *Mr. M. Mustert.*

151 **Knollcrest Band.** F and S, quarter course. Representative works in wind literature are studied and prepared for concert performance. Meets three times weekly and is open to all freshman and sophomore students who wish to participate in a concert band. *Mr. D. De Young.*

161 **Calvin Band.** F and S, quarter course. Representative works in wind literature are studied and prepared for concert performance. Meets four times weekly and membership is maintained at a set instrumentation. *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, and high school level. The course covers such topics 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. Students electing the course for only one-half course credit will do less research. *Mr. D. Topp.*

513 **Analysis.** A study of a wide variety of musical works selected from the major historical style periods of Western music. The goal will be to broaden and deepen the students' understanding of some of the principal techniques, styles, forms, and modes of expression in the music of Western civilization. Prerequisite: six college-level courses in music history and theory or permission of the instructor. *Staff.*

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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **Enjoying the World of Classical Music.** *Mr. M. Mustert.*

W11 **Music Aiding in Detroit Schools.** *Mr. D. Topp.*

W50 **Mozart.** *Mr. C. Stapert.*

W51 **Introduction to Music Theory.** *Ms. T. Huizenga.*

W52 **Deeds, Words, and Music.** *Mr. H. Slenk.*

IDIS W19 **Playing the Inner Game.** *Ms. C. Baker.*

Nursing

Associate Professor †M. Doornbos

Assistant Professors S. Benner, L. Burden, S. Etheridge, C. Feenstra, M. Flikkema, B. Gordon (acting chair), M. Gritter, C. Kyle, M. Leen, P. Mauger, S. Vandenberg

Instructors K. Niemeyer, D. Zuidgeest

Teacher-Practitioners M. Vanderveen, (Holland Community Hospital), M. Miller, S. Mlynarczyk, B. Timmermans (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 prenursing requirements in their freshman year, following closely the suggested program on page 70. Transfer students who wish to be considered for admission to the nursing program should consult the department chair.

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 Office of the Registrar. To be eligible for admission to the nursing program a student must have completed the eighteen courses in the pre-nursing program, nine of which must be the required courses in the natural and social sciences. A minimum cumulative grade point average of C+ (2.3) is required and a minimum grade of C- (1.7) is required in each of the natural and social science courses with a minimum grade point average of C (2.0) required for all natural and social science courses. Since enrollment in the final two years—the clinical nursing years—is limited, admission is selective, and completion of the pre-nursing program does not assure acceptance.

The baccalaureate nursing program requirements are described on pages 76-78.

301 Concepts of Nursing. F, one-half course unit. 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. *Ms. B. Gordon.*

312 The Nursing Process and Health Promotion Strategies. F, one and one-quarter course units. This course is designed to prepare students to use the nursing process in the promotion and maintenance of health. The focus of the course is assessment of well clients across the lifespan and nursing strategies to implement the nursing process in the promotion of health. These strategies include communication skills, health histories, nutritional assessments, health teaching and referral to community resources. There are three hours of theory and four hours of clinical practice per week. Clinical experiences provide opportunities for the application of theoretical concepts with well clients. Prerequisites: admission to the nursing program and registration in 301 and 321. *Ms. M. Leen, Ms. C. Feenstra.*

321 Assessment and Intervention Strategies for Nursing. F, one and one-quarter course units. 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 three hours of theory presentation and three to four hours of laboratory per week. Prerequisites: admission to the nursing program and registration in 301 and 312. *Ms. M. Flikkema.*

346 Introduction to Care of Clients in Altered States of Health. I, one course unit. This course will build on the theories and strategies gained in the first semester courses and is a prerequisite for entry into 352 and 375. The purpose of the course is to introduce the students to acute care nursing. Topics include application of the nursing process, physical assessment, strategies relevant to acute care nursing, and professional communication. The course will be a combination of clinical experiences, laboratory practice, and theory content. Prerequisites: 301, 311, and 321. *Staff.*

352 Alterations, Adaptations, and Nursing I. S, one and three-quarters course units. An introduction to the adaptation process of clients in altered states of health. Consideration is given to pathophysiology, socio-cultural factors, and developmental con-

cepts. 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 each week. Prerequisites: 301, 311, 321, and registration in two sections of 375. *Ms. S. Etheridge, Ms. P. Mauger, Ms. D. Zuidgeest, Ms. S. Vandenberg.*

375 Nursing Care for Clients in Altered States of Health I. S, one and one-half course units. Clinical nursing practice in a nursing specialty area provides students with an opportunity to apply core theory within a nursing setting. Clinical conferences are held weekly. The course consists of sixteen hours of clinical laboratory per 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. *Staff.*

401 Alterations, Adaptation, and Nursing II. F, one and three-quarters course units. 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 multi-dimensional 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 five hours of theory presentation and one hour of seminar each week. Prerequisites: 375 and registration in 425. *Ms. M. Gritter.*

425 Nursing Care of Clients in Altered States of Health II. F, one and one-half course units. 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 two different clinical components while taking 401. The course consists of sixteen hours of clinical laboratory per 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, three-quarters course unit. 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. A variety of nursing shifts and seven working days are used. Prerequisites: 401 and 425. *Staff.*

474 Nursing Management for Groups of Clients. S, two course units. This course gives students the opportunity to synthesize nursing theory and skills while developing a more advanced level of nursing practice. Clinical components include sixteen hours of experiences in institutional inpatient and outpatient community settings each week. The focus is on nursing management of groups of clients. Nursing theory is presented in weekly lecture-discussions; clinical experiences relate theory to practice. Prerequisites: 401, 425, 472, and registration in 482. *Ms. M. Flikkema, Ms. B. Gordon, Ms. M. Gritter, Ms. M. Leen, Ms. C. Feenstra.*

482 Nursing in Transition. S, one course unit. 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. *Ms. S. Benner, Ms. L. Burden.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

346 Introduction to Care of Clients in Altered States of Health (one course unit). *Staff.*

472 Individualized Clinical Nursing (three-quarters course unit). *Staff.*

Off-campus programs

CALVIN COLLEGE OFFERS semester- and year-long programs for students who want to study abroad and for those who would benefit from a different sort of academic experience in the United States than can be offered on campus. Although some of the programs are offered in conjunction with other institutions, they are officially Calvin-endorsed programs. Students in them are eligible for financial aid, although the denominational grant is reduced in some cases. Students in most programs are juniors or seniors but in some programs, such as the Study in Spain and Semester in Britain programs, sophomore students may be participants.

The specific requirements for admission differ from program to program, as indicated below, but for each the students must be in good academic standing (normally a g.p.a. of 2.5 or above) and social standing and must be recommended by the advisor of the program concerned. Furthermore, the students must determine with their advisors in advance how credit for such programs will be applied to graduation requirements and state this on a preliminary application for off-campus study. Once admitted to these programs, students must make a special registration at the Registrar's Office and must make financial arrangements, which differ from program to program, to pay the appropriate fees, including a \$75.00 administrative fee, at the Financial Services Office.

Other international programs not sponsored by Calvin College are available to students. Credit for them will be considered as transfer credit and financial aid is not available through Calvin. Additional information about off-campus programs and preliminary application forms can be obtained from Mr. Henry Hoeks, Coordinator of Off-Campus Study Programs.

AMERICAN STUDIES PROGRAM

Calvin College participates in the American Studies Program in Washington, D.C., which is sponsored by the Christian College Coalition and is based on the principle of integrating faith, learning, and living. Students 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.

Applicants should be juniors or seniors, should have a grade point average of 3.0 or higher, and should show promise of benefiting from the internship and seminar experience. Further information and application forms may be obtained from Mr. Corwin Smidt of the Department of Political Science.

American Studies Seminar. 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: acceptance into the American Studies Program and concurrent registration in 356 (American Studies Internship).

American Studies Internship. 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: acceptance into the American Studies Program and concurrent registration in 346 (American Studies Seminar).

AU SABLE INSTITUTE OF ENVIRONMENTAL STUDIES

This institute is sponsored by Calvin College and other evangelical Christian colleges and offers course instruction and internships in environmental studies. In a setting of northern lower Michigan forests, wetlands, lakes, and rivers, students take courses which provide academic content, field experiences, and practical tools for

stewardship of creational resources. Students who also complete work for a bachelor's degree at a liberal arts college approved by the Institute may earn certificates as environmental analysts, land resource analysts, water resource analysts, and naturalists.

Courses are offered during the January interim (I), during late May to early June (May term), during June and early July (Summer I), and from the middle of July to the middle of August (Summer II).

A summer fellowship and some grant-in-aid funds are available each year to qualified students. Interested students should get course enrollment forms and applications from the Au Sable advisor, Mr. Alan Gebben of the Biology Department.

January (Interim) Session

ASI 210 **Winter Recreation.** I, quarter course. Instruction in cross-country skiing, downhill skiing, snowshoeing, orienteering, inner-tubing, and winter camping.

ASI 212 **Winter Orienteering.** I, quarter course. Students learn to use orienteering as a tool to navigate safely through the winter woods. They refine skills in cross-country skiing, winter first aid, and survival. Prerequisite: 210 or permission of the instructor.

ASI 310 **Winter Biology.** I. Study of the biology and environment of northern Michigan plants and animals in winter condition. Lecture, films, and field experience. Prerequisite: one course in biology.

ASI 346 **Winter Stream Ecology.** I. Geological, physical, and chemical features of streams in winter, with a focus on ecological interactions and applications to the stewardship of streams and watersheds. Prerequisite: one year of general biology.

ASI 350 **Environmental Ethics.** I. Contemporary programs of environmental stewardship are investigated, including use of renewable and nonrenewable natural resources, pollution, appropriate land use and development, Third World concerns, and preservation of wild nature. These problems are set in a historical perspective of mankind's relationship to the natural environment, especially as this relationship is viewed in the light of Christian thought and doctrine. Current attempts to develop a theology of nature and principles of Christian stewardship are considered.

May Session

ASI 295 **Natural History in Spring.** May term. Springtime plants and animals, their field identification, field biology, behavior and landscape context, with a focus on spring flora, amphibia and birds. Designed with a focus on observation and sounds of life in the field that occur between the end of the spring college semester and the end of the spring high school semester to provide prospective teachers and naturalists with an opportunity to investigate the natural history of this very active time of year.

ASI 305 **Ornithology.** May term. Biology, behavior, ecology and identification of birds. Work will be primarily conducted in the field and will cover the major habitats of northern lower Michigan, including wetlands, lakes, rivers, forests, dunes, and open field communities. Emphasis will be placed on identification of the spring bird fauna of northern lower Michigan by sight and by call. Prerequisite: one course in introductory biology or zoology.

Summer Session I

ASI 301 **Land Resources.** Summer I. Systems-level perspective on land forms and ecosystems. Includes analysis and interpretation of on-site data recorded in the field and remote-sensing data derived from satellite and low-altitude aerial imagery. Field trips to and analysis of forests, bogs, marshes, dunes, and rivers. Includes application to policy and land use planning. Prerequisite: one year of introductory science.

ASI 303 **Natural Resources Practicum.** Summer I. Environmental analysis and natural resource planning in cooperation with local government.

ASI 311 **Field Botany.** Summer I. Field identification and ecology of vascular plants as components of natural communities in Michigan. Emphasis is placed upon on-site examination of plants in communities such as bog, dune, forest, marsh, meadow, and swamp. Plants difficult to study under field conditions are brought to the laboratory for dissection and identification. Ecological features such as community stratification and plant zonation along ecological gradients are examined. Prerequisite: one year of general biology or one semester of botany.

ASI 321 **Animal Ecology.** Summer I. The interrelationships between animals and their biotic and physical environments,

including behavioral aspects. This is a field course which centers on the autecology of northern Michigan fauna from a stewardship perspective. Included are studies of a resident population of beavers. Prerequisite: one year of introductory science.

ASI 390 **Directed Individual Study.** Summer I and II. Prerequisite: permission of instructor.

Summer Session II

ASI 302 **Water Resources.** Summer II. Field study of lakes and streams with applications to planning and management. Includes an introduction to limnology and investigation of representative lakes and streams of the region. Prerequisite: one year of general biology and one year of general chemistry.

ASI 304 **Natural Resources Practicum.** Summer II. Environmental analysis and natural resource planning in cooperation with local government.

ASI 312 **Insect Taxonomy and Ecology.** Summer II. A study of insect taxonomy, ecology, life histories, and economic importance. Special attention is given to environmental stewardship issues including use of insecticides, biological control, integrated pest management, and impact of cultivation on formation of pest faunas. Field methods are stressed. Prerequisite: one year of general biology or one semester of general zoology.

ASI 316 **Field Geology.** Summer I. The glacial geology and geomorphology of glaciated landscapes as the context of ecosystems and human settlements. The focus of the course is on the nature and interpretation of glacial features. Also included are an examination of the Kalkaska petroleum fields and identification and distribution of fossil brachiopods, corals, and other organisms in the Devonian and Silurian reefs at Alpena and Petoskey. Prerequisite: one year of introductory science.

ASI 322 **Aquatic Biology.** Summer II. A field course which involves collecting, culturing, identifying, and preserving aquatic plants and animals. Emphasis is upon water as a habitat, adaptation of organisms, and species interactions. Ramifications of human impacts receive special attention. Prerequisite: one year of general biology or one semester each of general zoology and general botany.

ASI 332 **Environmental Chemistry.** Summer II. Principles and analysis of chemical

movement and distribution, both natural and man-induced, in natural environments. Sampling and analytical methods are included for water, soil, and air. work will be conducted both on site in natural habitats and the laboratory. Prerequisite: one year of general chemistry and one semester of either biochemistry or organic chemistry.

ASI 342 Fish Biology and Ecology. Summer II. Identification, ecology, exploitation and stewardship of fishes and their habitats. Field studies include non-commercial and commercial fisheries in the Great Lakes region, ecological dynamics of fisheries exploitation and population ecology, fishing techniques, and fishing rights and regulation.

ASI 390 Directed Individual Study. Summer I and II. Prerequisite: permission of instructor.

CENTRAL COLLEGE PROGRAM

In cooperation with Central College, Calvin college offers semester- and year-long programs of study in France, Germany, Austria, Netherlands, and Spain which permit students to register for courses in a variety of subjects. To be eligible a student must have completed the study of the appropriate language through the second-year level. Those 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 London.

To be eligible for such programs, students must be maintaining a cumulative grade point average of 2.5 and must have the recommendations of two faculty members. Students should see Mr. Henry Hoeks to apply.

CHICAGO METROPOLITAN PROGRAM

The Chicago Metropolitan Center is a semester-long program sponsored by Calvin College together with Central, Dordt, Hope, Northwestern, and Trinity Colleges and is administered by Trinity Christian College. It offers qualified juniors and seniors with a grade point average of at least 2.5 the opportunity to gain a semester's credit, studying and working in Chicago. Students participate in seminars one day per week at CMC's Loop Center and spend four days a week in an internship related to

their career interest and academic major.

All students must take the Field Internship and select two of the three seminars available. Additional information and application forms may be obtained from Mr. Henry Hoeks.

Fine Arts Seminar. F and S. An investigation of urban cultural life as reflected in the arts of Chicago. Data for exploration is gathered by attendance at plays, concerts, movies, and art galleries. This primary information is processed through readings, lectures, and classroom discussion. The seminar operates on the premise that art mirrors the ideas and values held by a particular society or civilization and that students can be helped to read this cultural mirror more effectively. Meets fine arts core.

Metropolitan Seminar. A broad survey of the major issues in the life of the metropolitan community of Chicago. The seminar treats the economic, educational, political, and social welfare systems. Also it examines the meaning of living in the urban environment, the nature of the relationship between the city and the suburbs, and the relations of national priorities to the quality of life in the urban centers.

Values and Vocations Seminar. F and S. An exploration of the values dimension in life, what one lives for and why. Emphasis is placed on helping students determine their personal structure of values in the light of biblical norms. What is sought is a blueprint for an integrated life of Christian action and reflection. Effective September 1990, this seminar will not meet any core requirements.

Field Internship. F and S, two course units. Students enrolled in the Chicago Metropolitan Center program have a large number of placements available to them. Students may select internships from a range of organizations which include art centers, banks, businesses, hospitals, media centers, newspapers, publishing houses, mental health clinics, churches, social work agencies, museums, libraries, and zoos. Work internships demand high quality work and are supervised on the job and by Metropolitan Center staff members.

LATIN AMERICAN STUDIES PROGRAM

Participants in the Latin American Studies Program, administered by the Christian

College Coalition, will live and study for a semester, either in the fall or spring, in Costa Rica. Patterned after the American Studies Program in Washington, D.C., the program is designed to expose students to the economic and political realities of the relationship between the United States and developing nations of Latin America, to increase sensitivity to the needs of Christians in the Third World, and to deepen understanding of the Lordship of Jesus Christ in an international context.

Applicants must be juniors or seniors, have a 2.75 or higher grade point average, and must receive a recommendation from a member of the Spanish department.

Students will study the Spanish language intensively, will take a course in Latin American history and culture, and will be involved in a service experience. For further information and application forms consult Ms. Edna Greenway in the Spanish Department.

NETHERLANDS STUDIES PROGRAM

This cooperative program with Dordt College is offered each spring semester in Amsterdam. It enables students to live with Dutch families for part of their stay and near the Free University of Amsterdam for the remainder. Prerequisite is a semester of college-level Dutch or its equivalent, sophomore status or higher, and a cumulative grade point average of at least 2.5. Students will complete their foreign language requirement by taking Dutch 203 at Calvin in the fall. The advisor is Mr. Martin Bakker.

A plan of study will be devised for each student from the following courses, of which only two may be used for language core credit:

Elementary Dutch.
Intermediate Dutch.
Introduction to Modern Dutch Literature.
Advanced Dutch.
Dutch Art and Architecture.
International Marketing.
Dutch Culture and Society.
History of the Low Countries.
Individual Study.

OREGON EXTENSION PROGRAM

This cooperative program is conducted in Ashland, Oregon, during the fall semester. About thirty students become part of a small, intellectual community in a quaint rural setting. Instruction is personalized in

tutorial or small groups. The focus is on Christian reflection on contemporary life and thought. Students study one course in each of the following categories: Modern Visions of Human Nature; Science and Technology in the Modern World; Modern Visions of Society; and Religion and Modern Life. More than half of the academic work must be outside students' primary field of interest.

Applicants ordinarily should plan to take the program in their junior or senior year, have a grade point average of 3.0 or higher, and show promise of benefiting from tutorial and small group study and discussion. Details about the program are available from Mr. David Diephouse of the History Department. Credit is issued by Houghton College, Houghton, New York.

STUDY IN BRITAIN PROGRAM

Calvin College offers a study program each spring semester in cooperation with Oak Hill College in London. Oak Hill College is a theological college located in northern London. Calvin College students live in the college dormitories, have meals in the dining room, and worship in daily chapel services with the Oak Hill students and staff. Calvin students take the equivalent of four courses during the semester—two with the Calvin College professor who directs the program and two courses selected from the offerings of Oak Hill College. For spring 1991, the director is Ms. Margaret Masson, who will teach **Modern Drama** (English 316) and **Studies in British Culture** (IDIS 212). The courses from the Oak Hill curriculum include offerings in biblical and theological studies, church history, and sociology.

To be accepted into the program, students must have completed one year of college studies with a minimum cumulative grade point average of 2.5. Since enrollment is limited, selection of students will be based on appropriateness of the study to the applicant's college program, class level, and recommendations.

Information on the 1991 and 1992 programs is available from Ms. Margaret Masson, English Department, or from Mr. Henry Hoeks.

STUDY IN SPAIN PROGRAM

Calvin offers introductory and advanced Spanish language programs each spring semester in Denia, Spain. Students live with Spanish families and attend classes at

the local university. The cost of either program is approximately the same as for a semester in residence on campus, plus air travel to and from Denia.

In the introductory program, students earn credit for Spanish 101, 102, 201, and 202. Because enrollment is limited, preference is given to upperclass students who are maintaining a cumulative average of at least 2.5.

For the advanced program, Spanish 202 or its equivalent is a prerequisite. Students select four courses from Spanish 215, 216, 217, 303, 307, 309, and 371. The program is limited to students who are maintaining a cumulative average of 3.0 or better.

Complete information and application forms are available in the Spanish Department. The director is Ms. Dinora Cardoso.

Philosophy

Professors L. Hardy, J. Hare, K. Konyndyk, G. Mellema (chair), C. Orlebeke, D. Ratzsch,
†S. Wykstra, †L. Zuidervaart

Associate Professor K. Clark

Assistant Professors W. Dennison, M. Talbot

Professor of Interdisciplinary Studies M. S. Van Leeuwen

THE DEPARTMENT OFFERS A MAJOR concentration appropriate not only for future teachers of philosophy, but also for aspirants to professions such as law, the ministry, and government service. It consists of 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 advisor.

A minor concentration consists of 153; 171 or 173; 251 and 252; and two philosophy electives. Students with special interests, or who may wish to modify these minor requirements, should consult the department chair.

Students who wish to present one course toward the core requirement in philosophy should take 153. Those who wish to present two courses should take 153 and either 171 or 173; 153 and any intermediate or advanced level course; or, for those 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

freshman students; not recommended for students aiming toward graduate study of philosophy. *Mr. C. Orlebeke, Mr. D. Ratzsch.*

173 Introduction to Symbolic Logic. F. A course in elementary symbolic logic, including some modal logic. This course is recommended especially for science and mathematics majors, and for those intending to study philosophy on the graduate level. Open to qualified freshman students. *Mr. K. Clark.*

INTERMEDIATE SYSTEMATIC COURSES

All intermediate courses presuppose one course in philosophy and (after 153) satisfy core.

201 **Philosophy of Social Science.*** S. A study of philosophical problems arising out of the methods and results of the social sciences. Ms. M. Van Leeuwen.

202 **Philosophy of Law.*** S. 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.

203 **Philosophy of Physical Science.*** F. A study of philosophical problems arising out of the methods and results of the physical sciences. Mr. D. Ratzsch.

204 **Philosophy of Religion.*** S. A study of some philosophical questions arising from religious belief. Mr. K. Clark.

205 **Ethics.*** F and S. A course designed to deal both historically and situationally with the persistent problems of the moral life. Mr. J. Hare, Mr. M. Talbot.

207 **Political and Social Philosophy.*** S. A systematic study of the problems of social and political thought, historically oriented, with emphasis on political and social ideals, such as political and social justice; equality and the law; the basis of social and political authority; rights and obligations. Mr. L. Hardy.

208 **Aesthetics.*** F and S. A study of the nature of art and aesthetic judgments. Mr. J. Hare.

209 **Philosophy of Education.** S. A study of the nature, aims, and principles of education. Mr. G. Mellema.

211 **Philosophy of Gender.*** F. A study of the ways in which feminist theory and metaphysics, epistemology, philosophy of science, philosophy of language, and philosophy of religion. Particular attention will be paid to research and theory concerning men's vs. women's moral reasoning, questions about group vs. individual rights, feminist theorizing on human nature and the nature of scientific and other knowledge, and the impact of gendered theorizing on religious thought. Ms. M. Van Leeuwen.

INTERMEDIATE HISTORICAL COURSES

All intermediate courses presuppose one course in philosophy and (after 153) satisfy core.

251 **History of Philosophy I.*** F and S. A survey of the major Western philosophers and philosophical movements of the ancient and medieval periods. Mr. C. Orlebeke, Mr. M. Talbot.

252 **History of Philosophy II.*** F and S. 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. K. Konyndyk, Mr. W. Dennison.

ADVANCED HISTORICAL COURSES

All advanced courses presuppose two or more philosophy courses, or one philosophy course plus junior or senior standing. All satisfy core (after 153).

312 **Plato and Aristotle.*** Advanced study of Plato and Aristotle. Not offered 1990-91.

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.*** A study of the *Critique of Pure Reason*. Not offered 1990-91.

333 **Kierkegaard.*** S. A study of selected philosophical works of Kierkegaard, focusing primarily on his philosophy of religion. Not offered 1990-91.

334 **Marx and Marxism.*** A critical study of the thought of Karl Marx and his most important interpreters, including Lenin and contemporary Marxist humanists. Not offered 1990-91.

335 **Nineteenth Century Philosophy.*** A study of some major figures in nineteenth century continental European philosophy. Not offered 1990-91.

336 **Studies in Modern Philosophy.*** S. A study of major European rationalist thinkers of the seventeenth and eighteenth centuries. Mr. K. Konyndyk.

340 **Twentieth-Century Continental Philosophy.*** F. A study of major figures in recent phenomenology and existentialism. Mr. L. Hardy.

ADVANCED SYSTEMATIC COURSES

365 **Ethical Theory.** An examination of R. M. Hare's moral thought, Kierkegaard's *Either / Or*, and some recent feminist ethics

in the light of the biblical distinctions between flesh and spirit, and body and spirit. Not offered 1990-91.

371 **Epistemology.*** S. A study of the nature, sources, types, and limits of human knowledge. *Mr. G. Mellema.*

375 **Philosophical Anthropology.*** S. A critical examination of major philosophical discussions of human nature, with special attention to selected topics such as soul, mind, and body, immortality and resurrection, and computer simulations of mentality. *Mr. C. Orlebeke.*

380 **How to Be a Christian Philosopher.** An exploration, both historical and systematic, of how one's Christian faith should affect one's philosophical practice. Systematic topics will include ethics, epistemology, ontology, anthropology, and evolution. Historical sources will include the Patristics, Augustine, Aquinas, and later representatives of these traditions. Not offered 1990-91.

381 **Advanced Logic.*** F. Topics include the formalization of propositional and quantificational logic. Taught jointly with the Mathematics Department and also listed as Mathematics 381.

390 **Readings and Research.** F, I, S. Prerequisite: permission of chair. *Staff.*

395 **Metaphysics.*** F. A study of selected topics of metaphysics. *Mr. G. Mellema.*

GRADUATE COURSES

501 **The Educational Enterprise: A Philosophical Perspective.** Summer. 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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **The Pentecostal Movement: History and Doctrines.** *Mr. D. Ratzsch.*

W11 **Emotions and the Christian Life.** *Mr. M. Talbot.*

IDIS W17 **Death and the Meaning of Life.** *Mr. K.J. Clark.*

IDIS W54 **Computer Fervor: Information Technology in Human Affairs.** *Mr. K. Konyndyk, Mr. K. Peterson.*

Physical education and recreation

Professors R. Honderd, N. Meyer, J. Timmer, G. Van Anandel, D. Vroon, M. Zuidema (chair)
Associate Professors G. Afman, D. Zuidema
Assistant Professors E. Douma, †M. Schutten, J. Pettinga
Instructors J. Ter Molen, E. Van Hoff, N. Van Noord, E. Driesenga

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, exercise scientists, 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 chair. 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 courses numbered 200 and above. For those students interested in exercise science, the general major sequence is required, plus a seven-course science cognate consisting of Biology 131, 205 and 206; Chemistry 113 and 114; Physics 223; and Mathematics 143. Students selecting a concentration in exercise science should plan to enter graduate school 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 required eight and one-half course units for the major in recreation are met by 201, 215, 303, 304, 305, 310, 346. The four required cognate courses include Psychology 201; Psychology or Sociology 310; Physical Education 220 and one unit from Physical Education 221, 230-243, or 380. The professional program also requires a six-course minor from another discipline and must meet approval of the Recreation program advisor. Students who wish to pursue professional certification in therapeutic recreation (recreation therapy) are also required to take Recreation 314 and 324. (See model program on pages 79-80.) The program in recreation leads to a Bachelor of Science in Recreation and requires the approval of the recreation advisor, Mr. Glen Van Andel.

Students who wish to minor in physical education may choose from three areas of concentration. A secondary teacher education minor requires six courses: 212, 220, 302, 325, 332, 380, and one course unit from the 240 series. The elementary teacher education minor is 212; 220; one course unit from 240-243; 302; 325; 332; and a half course credit in 380. 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 is met by taking 104 (Perspectives); one quarter course from those numbered 110-124 (Health Fitness Courses); and the remaining two quarter courses from 125-149 (Competitive Sports), 150-179 (Recreation Sports and Dance), or 180-199 (Special Emphasis Courses). Physical Education 221, and courses from the 230 series or 240 series may be substituted for one of the courses in the 125-186 series. Although students may take courses in addition to these, only one course unit of credit may be applied to the minimum graduation requirements.

PHYSICAL EDUCATION COURSES

104 *Physical Education Perspectives*. F and S, quarter course. Required of all students. This course covers topics dealing with a Christian perspective on physical education. A survey of positive health practices in health fitness, including cardiovascular and muscular physiology, nutrition, body composition, and stress management. Also included are lectures on play, leisure, recreation, and sports in a contemporary society. The course involves lectures, laboratories, discussions, and exercise sessions. *Staff*.

110-124 **Health Fitness**. F and S, quarter credit. Required of all students. The courses listed in this series have as a primary goal physical conditioning. Courses are either concerned with aerobic cardio-

vascular conditioning or the development of efficient muscular function. The courses included in this series are: aerobic jogging, aerobic swimming, aerobic dance, aerobic basketball, weight training, weight reduction, and therapeutic exercise. Prerequisite: 104. *Staff*.

125-149 **Competitive Sports**. F and S, quarter credit. The courses listed in this series include team and individual sports popular in the American society. The course's primary goals are skill development and participation. The courses included in this series include: volleyball, soccer, badminton, golf, tennis, and racquetball. In many courses personal equipment is needed to enroll in the courses. Prerequisite: 104. *Staff*.

150-179 **Recreational Sports and Dance.** F and S, quarter credit. The courses listed in this series have as their primary goals skill development and participation. The activities are less competitive and have greater lifetime recreational value. The courses include: skiing, bowling, new games, swimming, and dance. Prerequisite: 104. *Staff.*

180-199 **Special Emphasis Courses.** F and S, quarter credit. The courses listed in this series are offered to attempt to meet the special needs of students. Students may select a course from this group based on counseling or academic program. The courses include: beginning swimming, senior life saving, first aid, sports officiating, self-defense for women, and karate. *Staff.*

201 **Historical Foundations of Physical Education, Recreation, and Sport.*** F. A study of physical education, recreation, and sport in the context of their history and development as well as an overview of their role in and significance to contemporary society. *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. J. Timmer.*

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.*

215 **Physical Education and Recreation for Special Populations.** S. Philosophy and basic concepts relating to planning and conducting programs in community settings for individuals with disabilities. Concepts and techniques in program planning, leadership and adaptation of facilities, activities and equipment in recreation and physical education services for individuals with special needs are reviewed and discussed. Prerequisites: Physical Education 201 or permission of the instructor. *Mr. J. Timmer.*

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. *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 (110-199) for physical education majors and minors and for elementary teacher education students. *Mr. M. Zuidema, Mr. J. Pettinga, Staff.*

230-238 **The Coaching of Sports.** Half courses. Students with a minor concentration in physical education must take two of these courses. Other college students with an interest in coaching are encouraged to elect courses in this series. Prerequisite: a record of participation in skill performance or completion of the same activity in 380.

230 Field Hockey. F. *Ms. D. Zuidema.* Not offered 1990-91.

231 Basketball. F. *Mr. E. Downa.*

232 Baseball / Softball. S. *Mr. J. Pettinga.*

233 Track and Field. S. *Mr. R. Honderd.* Not offered 1990-91.

234 Soccer. F. *Mr. G. Afman.* Not offered 1990-91.

235 Volleyball / Tennis. S. *Ms. J. Ter Molen, Mr. D. Vroon.* Not offered 1990-91.

236 Football. F. *Mr. J. Pettinga.* Not offered 1990-91.

238 Wrestling. F. *Mr. J. Pettinga.* Not offered 1990-91.

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: completion of a basic physical education course in the activities to be studied, credit for the activities in 380, or competence in the sports.

240 Teaching of Gymnastics and Rhythmics. S. Ms. N. Van Noord, Ms. E. Van't Hof. Not offered 1990-91.

241 Teaching of Team Sports. F. Mr. D. Vroon. Not offered 1990-91.

242 Teaching of Aquatics, Track, and Weight Training. S. Mr. J. Timmer, Mr. R. Honderd.

243 Teaching of Racquet Sports and Golf. F. Ms. J. Termolen.

301 Measurement and Evaluation in Physical Education.* S, half course. A study of the evaluation techniques and principles in physical education. Emphasis on evaluation of physical fitness, body mechanics, growth, motor ability, sport skills, knowledge of health practices and sports activities, and program evaluation. Consideration is given to the organization of evaluation programs and the use of such programs. The course gives opportunity for practical experience in administering tests. Mr. M. Zuidema.

302 Organization of the Curriculum and Programs of Physical Education. S. A study of the structure and curricula of modern physical education programs of elementary and secondary schools and the closely-related areas of administration of athletics, intramurals, recreation, and health programs. Opportunity is given to construct total programs of physical education for selected schools. Mr. M. Zuidema.

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 Blaey.

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. G. Afman.

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. Ms. N. Meyer, Mr. J. Timmer.

359 Seminar in Principles and Practices of Physical Education Teaching. S. The seminar deals with perspectives and methods of teaching physical education. This course should be taken concurrently with Education 349: Directed Teaching. Before taking this course, students must be admitted into Directed Teaching by the Education and Physical Education Departments. Students must complete the physical education major prior to student teaching. Fifth year and transfer students with special needs may seek departmental authorization to student teach and take Physical Education 356 during the first semester. Mr. M. Zuidema, Mr. J. Pettinga.

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

201 Historical Foundations of Physical Education, Recreation, and Sport.* F. (See description under Physical Education 201.) Mr. J. Pettinga.

215 Recreation for Special Populations. S. Philosophy and basic concepts relating to planning and conducting programs in community settings for individuals with disabilities. Concepts and techniques in program planning, leadership and adaptation of facilities, activities and equipment in recreation and physical education services for individuals with special needs are

reviewed and discussed. Prerequisites: Physical Education / Recreation 201 or permission of the instructor. *Mr. J. Timmer.*

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. *Ms. D. Zuidema.*

304 Management of Leisure Services. S. A study of the principles, policies, theories and procedures involved in the organization and administration of leisure services in a variety of contemporary settings. *Mr. G. Van Andel.*

305 Program Planning and Development. F. A study of the principles and techniques of recreation program development. The application of a program development model which is used in the organization and planning of recreation programs is emphasized. *Mr. G. Van Andel.*

310 Theory and Philosophy of Leisure. F. A study of the theories and philosophies of work, recreation, and leisure that influence contemporary culture. Emphasis is placed on the development of a Christian perspective on work, recreation, and leisure and its implications for professional practice. *Mr. G. Van Andel.*

314 Principles of Therapeutic Recreation. F. An introduction to the history, philosophy, and concepts of therapeutic recreation. An orientation to the role and function of therapeutic recreation personnel in the treatment of persons with psychological impairments, physical impairments, developmental impairments, pediatric illnesses, and the problems of aging are presented. Prerequisites: Physical Education / Recreation 215, Recreation for Special Populations, or permission of the instructor. *Mr. G. Van Andel.* Not offered 1990-91.

324 Therapeutic Recreation Practice. F. An introduction to the basic methods and techniques used in the delivery of therapeutic recreation services. Skills in interpersonal and helping relationships are reviewed and practiced in the context of their application to specific treatment approaches including leisure counseling, play therapy, physical confidence classes, stress-challenge, and physical fitness programs. Prerequisites: Physical Education / Recreation 215, Recreation for Special Populations, and Recreation 314, Principles of Therapeutic Recreation, or permission of the instructor. *Mr. G. Van Andel.*

346 Field Internship and Seminar. S and SS, three course units. This course involves a one-semester field experience in a recreation service or agency. The seminar focuses on the problems and issues involved in relating classroom learnings to professional practice. Prerequisites: completion of all courses in the recreation program, a minimum cumulative average of C (2.0), and the approval of the department. *Mr. G. Van Andel.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 Teaching of Leisure-time Sports. Ms. D. Zuidema.

W11 Application of Psychology to Athletics and Physical Education. Ms. N. Van Noord.

IDIS W19 Playing the Inner Game. Ms. C. Baker.

IDIS W22 Christian Perspectives on Work and Vocation. Mr. S. Simpson, Mr. G. Van Andel.

IDIS W24 . . . and a Time to Dance. Ms. E. Van't Hof.

Physics

Professors R. Griffioen, A. Kromminga, D. Van Baak, H. Van Till (chair), †J. Van Zytveld
Associate Professors S. Haan, S. Steenwyk
Assistant Professor J. Cannon

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. Physics majors who are juniors or seniors should enroll in Physics 195 each semester, and are also expected to attend Physics Department seminars.

Students planning to pursue graduate study in physics should take, in addition to the introductory courses, 280, 335, 345, 346, 365, 375, 376, a minimum of a half course credit of 382, 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. The advisor for this program is Mr. Howard Van Till.

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, 253, and one from 245, 353, 375, 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 261–262; and two and a half courses of approved electives. Courses recommended for such electives include Physics 280, 382, Chemistry 201, 304 or 317, and 396. The advisors for such programs are the chairs 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 chairs of the three departments must approve each program of this type.

A six-course minor, 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 chair.

The physical science core requirement may be met by 110, 111, 223, or the combination of 212 and IDIS 213. Students preparing to be elementary teachers should take 111 or 212 and Interdisciplinary 213.

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 111, 123, 126, or 221. Laboratory. Prerequisites: high school algebra and Mathematics 100, 221, or the equivalent. *Staff.*

111 Physical Science for Elementary School Teachers. F and S, core. An introduction to the physical sciences for students preparing to be teachers in the elementary school. Employing extensive laboratory experience and an historical approach, this course pays particular attention to the processes involved in scientific investigation and in the development of scientific understanding. The principal topics for consideration are selected from theories of motion, with application to observational astronomy. This course is the department's physical science core course for future elementary school teachers and should only be taken by students considering the elementary education program. Not open to those who have taken or plan to take 110, 123, 126, 221, or 223. Prerequisites: a year of algebra and a year of geometry in high school. *Staff.*

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 are discussed. Prerequisites: concurrent registration in or completion of 181, Mathematics 161, and, if possible, Computer Science 141. *Mr. H. Van Till.*

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. H. Van Till.*

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. 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.*

212 Physics for Elementary and Middle School Teachers.* F, alternate years. (The combination of this course with IDIS 213 satisfies physical science core.) A continuation of Physics 111, this course uses a laboratory based approach in surveying topics

in physics that are relevant for teaching in the elementary and middle schools, but which are not covered in 111. The course is designed to give prospective teachers background knowledge and experiences that will help them to teach hands-on physics effectively. Topics covered include energy and work, fluids and buoyancy, heat, sound, light, electricity and magnetism, and radioactivity. The relationships of these science topics with the corresponding technology and with society are discussed. Prerequisites: Physics 111 or high school physics.

221 General Physics. F, one and one-quarter course. This course is designed for those who do not intend to do further work in physics. The major areas of physics are discussed: mechanics, heat, electricity and magnetism, light, waves, relativity, and quantum theory. Laboratory. Prerequisites: plane trigonometry and high school algebra. *Mr. S. Steenwyk.*

222 General Physics. S, one and one-quarter course, core. A continuation of 221, which is a prerequisite. Laboratory. *Mr. S. Steenwyk.*

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. Cannon.*

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. *Staff.*

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, mol-

ecules, solids, nuclei, and fundamental particles as described by Schroedinger theory. Einsteinian relativity and statistical mechanics are also introduced. Prerequisites: 225, Mathematics 261. *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, and integrated circuits. Laboratory exercises in all of the above topics are performed. Prerequisite: 225. *Staff.* (Also see Interim 1990-91 offerings.)

285 Introduction to Digital Electronics. F, alternate years. 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 204 and 284. Laboratory. (Offered in 1990-91 during Interim only.)

385 Introduction to Microprocessors.* S, alternate years. An introduction to microprocessors, including the following topics: technology of microprocessor development, microprocessor architecture, programming, systems design, interfacing, and peripherals. Laboratory. Prerequisites: 285 or its equivalent and programming experience.

ADVANCED THEORY COURSES

All students enrolled in Advanced Theory Courses are expected to attend Physics Department seminars regularly. 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. Not offered 1990-91.

345 **Electromagnetism.*** F, alternate years. The basic equations of electromagnetism are developed and applied to simple charge and current distributions. Further applications are made to electromagnetic energy and electromagnetic properties of matter. Prerequisite: 225. *Mr. A. Kromminga.*

346 **Electromagnetism.*** S, alternate years. Maxwell's equations are developed and applied to electromagnetic radiation and physical optics. The relativistic character of electromagnetism is discussed and applied to motion of charged particles and the radiation they emit. Prerequisite: 345. *Staff.*

359 **Seminar in Secondary Teaching of Physics.** S. A course in perspectives on, principles of, and practices in the teaching of physics on the secondary level. This course should be taken concurrently with Education 349. The seminar provides a forum for the discussion of concerns that develop during directed teaching. This course is part of the professional education program and may not be included in the major or minor in physics.

365 **Thermodynamics and Statistical Mechanics.*** Alternate years. 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 statistic mechanics. Prerequisite: 335. Not offered 1990-91.

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 326. *Mr. D. Van Baak.*

376 **Quantum Mechanics.*** S. A continuation of 375, which is a prerequisite. *Mr. D. Van Baak.*

379 **Contemporary Physics.*** S. An introduction to one or more of the major areas of current research in physics. The course emphasis may be on solid-state, atomic, nuclear, or elementary-particle physics. Prerequisite: 375. *Staff.*

390 **Independent Study in Physics.** F, I, S, half or full course. Independent readings and research in physics under the supervision of a member of the departmental staff. Prerequisite: permission of the chair. *Mr. H. Van Till.*

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. *Staff.*

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. *Staff.*

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 204 and 284, 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: 111 or its equivalent. Not offered 1990-91.

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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **Digital Electronics for Computer Science.** *Mr. J. Cannon.*

W11 **The Quantum World.** *Mr. A. Kromminga.*

W50 **Laboratory Electronics.** *Mr. S. Steenwyk.*

Political science

*Professors J. De Borst, **R. De Vries, J. Penning (chair), C. Smidt, C. Strikwerda*
Associate Professors L. Lugo, W. Stevenson

TO BE ADMITTED TO A MAJOR PROGRAM in political science a student must have completed one of the core credit courses (151, 201, or 210) with a minimum grade of C (2.0). The major program requires American politics (201), international politics (207), one course in comparative government (203, 204, 205, 206, 214, or 303), one course in political theory (305 or 306), plus six additional courses in the department. Only one interim course may be applied to a major.

The political science major program in international relations requires 201, 207, and 305 or 306; seven additional courses from 203, 204, 205, 206, 214, 303, 308, 309, or one political science elective; plus an approved four-course sequence outside of political science.

A general political science minor requires one course in American politics (201, 202, 209, 212, 310, 312, 315, 317 or 318), one course in comparative and international politics (203, 204, 205, 206, 207, 210, 214, 303, 308, or 309), one course in political theory (151, 305, or 306), and three additional courses, one of which may be an interim course.

Political science majors are encouraged to enroll in internship programs and a variety of off-campus interims in the U.S. and abroad. The department offers a two-course credit Internship in State and Local Government, P.S. 380. Interested students should contact Mr. J. Penning. Students may also enroll for a semester in the American Studies seminar and internship in Washington, D.C., for which they may receive up to two course credits in political science (see Off-Campus Programs). The department also cooperates with the Washington Center for Learning Alternatives. Students interested in Washington programs should contact Mr. Corwin Smidt.

Students preparing for a secondary teaching certificate should follow the normal major but need complete only five additional courses. A secondary

teacher education minor requires 151, 201, 202, and three additional courses approved by the departmental advisor for teacher education, Mr. Robert De Vries. The elementary teacher education minor requires 151, 201, 202, one course in international politics (207, 308, or 309), one course in comparative government (203, 204, 205, 206, 210, 214, or 303), and one additional course in American politics (209, 212, 310, 312, 315, 317, or 318). One interim course may substitute for a course in the last three categories.

Although the political science core requirement may be satisfied by 151, 201, or 210, Canadian students 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 basic political concepts and issues, including the nature and task of the state, the ideologies which shape modern political life, and Christian contributions to political thought and practice. *Staff.*

201 American Politics. F and S, core. A study of American national politics. Emphasis is on the social context, constitutional foundations, processes, and functions of American politics. *Staff.*

202 American State and Local Politics. F. A study of American politics at the state and local levels. Emphasis is on state policy-making, urban politics, and metro-politics. *Mr. J. Penning.*

203 West European Politics. F. A study of the government and politics of Great Britain, France, and Germany. Attention is given to historical development, current political structures, and movements toward economic and political union. *Mr. C. Strikwerda.*

204 Latin American Politics. F. A study of modern Latin American politics with special emphasis on how different types of political regimes address the challenge of economic development. *Mr. L. Lugo.*

205 Asian Politics. A study of the government and politics of China, Japan, and selected Asian states such as the Philippines and South Korea. *Mr. C. Strikwerda.* Not offered 1990-91.

206 The Soviet Union and Central Europe.* S. A study of the development of the Soviet political system and recently-initiated reforms as well as Soviet relationships with the developing non-communist systems of central Europe. *Mr. C. Strikwerda.*

207 Introduction to International Politics. F and S. An analysis of different theoretical approaches to the study of international politics and major problems of the international system, such as nationalism, imperialism, war, nuclear weapons, hunger, and poverty. *Mr. R. De Vries, Mr. L. Lugo.*

209 Public Administration.* S. An introduction to public administration, focusing on administrative organization, public management, personnel administration, and public finance. The political and administrative problems of government agencies charged with implementing public policies. *Mr. J. Penning.*

210 Canadian Government and Politics. F. A study of the political system of Canada with emphasis on national (federal) government and politics. Examines 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 election, social forces and trends in Canadian politics. *Mr. J. De Borst.*

212 American Public Policy. S. An examination of American public policy, focusing on the process of policy-making, methods of evaluating public policy, and the content of American public policy in key areas such as defense, social welfare, criminal justice, and education. *Mr. J. Penning.*

214 Central American Politics. An in-depth analysis of the domestic, regional, and international dimensions of the politics of Central America. The role of the United States and of religious communities will be given special attention. *Mr. L. Lugo.* Not offered 1990-91.

295 Special Topics in Political Science: The Politics of Drug Abuse. F. A study of the nature of drug abuse as a distinctly political problem, the various ways that political thinking and political action give

rise to and address this problem, and the ways in which Christian faith informs and undergirds our understanding of this issue. *Mr. W. Stevenson.*

295 Special topics in Political Science: TBA. *S. Staff.*

303 African and Indian Politics.* A study of the politics and governments of the African states and India. Emphasis is on the issues and problems of political and economic development. *Mr. R. De Vries.* Not offered 1990-91.

305 History of Political Thought to the Reformation.* F. The development of political thought from ancient Greece to the sixteenth century. *Mr. W. Stevenson.*

306 History of Modern Political Thought.* S. Representative political theorists from the Reformation to the present. *Mr. W. Stevenson.*

308 Principles of American Foreign Policy.* 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, emerging nations, and the United Nations; the limitations and potential of American foreign policy. *Mr. R. De Vries.* Not offered 1990-91.

309 International Organizations and Law.* F. An examination of universal and regional international organizations and international law; their function and processes, their limits and possibilities, and their relationship to the international system. Special emphasis is given to the United Nations system. *Mr. R. De Vries.*

310 The Judicial Process and Civil Liberties.* 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 expression and defendant rights. *Mr. J. De Borst.* Not offered 1990-91.

312 Congress and the Legislative Process.* A study of Congress, its members, and the legislative process. Attention is given to the impact of institutional, political, and personal factors in the legislative process, to change in the relative importance of Congress in the policy-making process, and to the types of policies which are likely to emerge from legislative bodies.

The focus is on Congress, but state and foreign legislatures are considered for comparative purposes. *Mr. C. Smidt.* Not offered 1990-91.

315 The American Presidency.* S. 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. *Mr. J. De Borst.*

317 Parties and Elections.* An analysis of the nature and importance of political parties and elections to American politics. Topics included are party development, party organization, political campaigns, electoral laws, public opinion, voting behavior, and election reforms. Attention is also given to survey research and the analysis of poll data. In election years, students enrolled in the course are encouraged to participate in the political campaign of the party or candidate of their choice. *Mr. C. Smidt.*

318 American Politics and Mass Media.* S. 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 in state or local government. Interns work ten to sixteen hours per week under the direction of an agency instructor and attend weekly seminars conducted by a college instructor. Prerequisites: two political science courses, including 202, or permission of college instructor. Application for internships is made in September of each year. *Mr. J. Penning.*

390 Independent Study. F, I, S. Reading or directed projects for majors. Open with the permission of the chair and the instructor under whom the work will be done. *Staff.*

395 Seminar.* *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 Miami: Microcosm of America's Drug Problem. Off campus. *Mr. L. Lugo, Mr. W. Stevenson.*

W11 International Organizations in Europe. Off campus. *Mr. R. De Vries.*

W12 Eyes on the Prize: The Civil Rights Years. *Mr. J. De Borst.*

W50 Interim in Washington, D.C. Off campus. *Mr. C. Smidt.*

W51 Law and Society: Implementing Justice from a Legal Perspective. *Ms. J. Stronks.*

Psychology

*Professors **M. Bolt, J. Brink, W. Joosse, A. Shoemaker, S. Stehouwer, K. Storm, R. Stouwie, R. Terborg (chair), G. Weaver*
Assistant Professor J. Lee

THE DEPARTMENT OFFERS A VARIED set of courses dealing with important facets of individual human functioning. The major and minor programs in psychology are designed to allow students the flexibility to select courses which fit their present interests as well as their future expectations. Students majoring in psychology often enter "people-related" jobs in business, education, and the social services, or pursue graduate study in psychology or associated fields.

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. A student handbook for majors can be obtained from the departmental office.

Students intending to do graduate work in psychology or related fields should include 395 in their program of concentration and should plan their program with a departmental advisor.

The secondary teacher education minor consists of six courses: 151, 212, 306, 311, one course from 330-334, and one elective. An elementary minor is not available.

The general psychology minor consists of six courses: 151; at least one course from 250, 306, 308, or 330-334; and four approved electives, one of which may be a psychology interim course. The core requirement in psychology is best met by 151. Education 301 satisfies the core requirement only for students in teacher education programs.

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 intro-

duced 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.* F and 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 factors which influence that behavior. Not open to students who have taken or plan to take 204 or 207. Prerequisite: 151 or Education 301, 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 Education 301, 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 adolescents face in their different roles. Not open to students who have taken or plan to take 201. Prerequisite: 151 or Education 301, or permission of the instructor. *Mr. R. Stouwie.* Not offered 1990-91.

211 Personality and Adjustment.* F. A study of theory and research pertinent to personality dynamics and adjustment. Coverage typically includes concepts of mental health, the nature of stress, the self concept, and principles of emotional and interpersonal competence. Special emphasis is given to influential world views, Christian assessments, and personal applications. Prerequisite: 151 or permission of the instructor. *Mr. W. Joosse.*

212 Psychopathology.* F and S. A study of the wide range of abnormal behaviors. Emphasis is on causes, dynamics, and classification, with some attention to treatment approaches. Prerequisite: 151 or permission of the instructor. *Mr. S. Stehouwer, Mr. G. Weaver.*

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 Education 301, 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. Shoemaker.*

301 Organizational Psychology. F and S. A consideration of psychological concepts and research related to human action in work situations, particularly in organizations. The course includes discussions of the psychological processes of individuals involved in work and management (e.g., perceptual discrimination in varying tasks, strategies in problem solving, motivation for power and achievement, effects of compensation on learning), and the social psychology of the work organization (communication patterns, decision-making processes, performance evaluation, conflict, and stress). The relationship of psychological theory and practice are analyzed through case studies of organizational experiences. Prerequisite: 151 or permission of the instructor. *Mr. J. Lee, Mr. A. Shoemaker, Mr. G. Weaver.*

306 History and Systems of Psychology.* F and S. A study of the origins of contemporary psychology within science and within philosophy, and of the development of various systematic approaches to psychology as a separate academic discipline in Europe and the United States. Prerequisites: two courses in psychology or permission of the instructor. *Ms. K. Storm.*

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 majors 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. *Ms. K. Storm.*

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. Shoemaker.*

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.* This course explores the relationships of psychology to, or its involvement in such areas as religion, literature, art and culture.

When offered the particular topic area will be announced in the class schedule. Offered on an irregular basis. Prerequisite: 151 or permission of instructor. *Staff.*

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.* Not offered 1990-91.

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.* S. 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. *Mr. A. Shoemaker.* Not offered 1990-91.

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 are discussed. Discussion of the mind / brain problem. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Staff.*

334 **Cognitive Psychology.*** F. A survey of research and theory in the study of human cognition. The course covers the acquisition, representation, and use of knowledge with emphasis on the processes of memory, language, and decision-making. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Mr. J. Lee.*

390 **Independent Study.** F, I, S. Prerequisite: permission of the department chair. *Staff.*

395 **Research Seminar.*** F. The preparation, presentation, and discussion of papers based on current psychological literature and upon individual empirical research on selected topics. Prerequisites: 250 and 308 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.

511 **Introduction to Guidance and Counseling.** A survey of theories of emotional disturbance / behavior disorders and learning disabilities among school-age children

and adolescents, including specific examination of psychodynamic, biophysical, systemic, and behavioral models of etiology and treatment. Particular emphasis will be given to identifying methods of treatment in the elementary and secondary schools and the community. *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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **Health Psychology.** *Ms. D. DeGraff.*

W50 **Psychology of Gender.** *Ms. M. Van Leeuwen.*

W51 **Current Issues in Psychology.** *Mr. R. Stouwie.*

W52 **Child and Adolescent Psychopathology and Psychotherapy.** *Mr. R.S. Stehouwer.*

W53 **To Punish or Not to Punish?** *Mr. R. Terborg.*

W54 **Knowing Yourself: The Psychology of Self-understanding.** *Mr. J. Brink, Mr. G. Weaver.*

IDIS W18 **Christian Living.** *Mr. W. Joose.*

Religion and theology

Professors P. Holtrop, J. Primus (chair), G. Spykman, H. Vander Goot, L. Vos
Associate Professors J. Schneider, R. Van Leeuwen
Assistant Professors T. Eves, R. Plantinga, K. Pomykala, C. van Houten

THE DEPARTMENT offers a major in religion and theology, a secondary teaching major, a teaching minor in the academic study of religions, a group minor in missions, and several other departmental minor programs. These programs will be worked out with the help of departmental advisors who will take into account the student's special needs and interests.

The major program requires ten courses including 103, 201, and 396. Four courses are to be selected from one of the following areas: biblical studies, systematic/historical studies, and world religion studies. The additional three courses are to be chosen from the other two areas. One interim course, if approved by the department chair, may be included in the required ten courses. An approved four-course sequence in another department is also recommended. Prerequisite to admission to the program is the completion of 103 with a minimum grade of C (2.0). The advisor for this program is the department chair.

The teaching major prepares students for religion teaching in secondary schools. This program has the Academic Study of Religions minor (see below) at its core. Eleven courses are required including 103, 201, 151, 351, and IDIS 234. Four additional courses are to be chosen from the biblical studies and systematic/historical studies offerings (at least one in each area). Finally, two electives are to be chosen from the Academic Study of Religions electives listed below. During student teaching for this program, students will enroll in Education 346A and Religion and Theology 359. Since the State of Michigan does not certify students with a major in religion and theology, students who take this teaching major must also complete another major for state certification. Graduates of the religion and theology teaching major will receive a special certificate from Calvin College as a credential of qualification for secondary religion teaching. The advisor for this program is the department chair.

The teaching minor leading to State of Michigan certification in the academic study of religions requires six courses including 151, 351, 359, and Interdisciplinary 234. The two additional courses are chosen in consultation with the program advisor from the following: Art 231, Classics 231, History 201, 202, Philosophy 204, 205, Psychology 323, Religion and Theology courses in biblical studies and systematic/historical studies, and Sociology 217, 311, or approved interim courses. Student teaching is offered only in the spring semester. The advisor for this program is the department chair.

The group minor in missions consists of six courses including 252, 253, and Sociology 253. The three additional courses are chosen in consultation with the advisor from the following: 251, 351, 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 and

other courses approved by the advisor as part of an introduction to wholistic missions. This group minor may be taken with the religion and theology major program. The advisor for this program is the department chair.

There are two other departmental minor programs. One in biblical studies requires six courses: the two core courses plus four from the biblical studies offerings. The minor in systematic / historical studies similarly requires six courses: two core plus four from the systematic / historical offerings. An appropriate interim course may be included in either of these programs with the approval of the department chair.

The two core requirements in religion and theology are normally met by taking 103 and 201. These requirements may also be fulfilled, however, by taking one of the 200-level courses in biblical studies, and any one of the systematic / historical offerings or 251. Any departmental course except interims may be chosen by students electing a third core course in religion and theology. Interdisciplinary 234 will also satisfy as a third core course in religion and theology.

BIBLICAL STUDIES

103 **Biblical Literature and 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, Intertestament, and New Testament eras. Biblical books are analyzed, varying modes of literary expression are examined, and the major themes of Scripture are explicated. Open only to freshman and sophomore students. *Staff.*

211 **Pentateuch.** S, core. A study of the major themes of the Pentateuch: Genesis 1-11, Patriarchs, Exodus, Sinai, Wilderness and Conquest. The course will probe Israel's continual reflection on these themes throughout her history and the central role of these themes in the larger canon. Not open to freshman students. *Mr. T. Eves.*

212 **Conquest and Monarchy.** Core. A study of the two distinct interpretations of the monarchy in Israel: The deuteronomic history (Deuteronomy-II Kings) and the chronicler's history (I-II Chronicles). The different historical settings will be examined, and the particular theological emphases will be detected through careful literary comparison of the two accounts. Not open to freshman students. Not offered 1990-91.

213 **The Psalms and Wisdom Books.** F, core. A study of the books of Psalms, Proverbs, Job, and Ecclesiastes. The three focuses of the course will be: how to read poetry, the different categories of the Psalms and their interpretation, and the

role of wisdom books in the Bible. Not open to freshman students. *Mr. R. Van Leeuwen.*

214 **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 freshman students. *Ms. C. van Houten.*

221 **Synoptic Gospels.** S, core. A study of the first three gospels, concentrating on their relationships, similarities, and differences in form and message. Not open to freshman students. *Mr. L. Vos.*

222 **Johannine Literature.** F, core. A study of that body of literature traditionally associated with the apostle John: the fourth gospel, I-III John, and the Apocalypse of John, with a view to considering matters of introduction, structure, literary interrelationship, interpretation, and theology. Not open to freshman students. *Mr. K. Pomykala.*

223 **Acts and Paul's Letters.** Core. A study of the place and role of the book of Acts and the epistles of Paul in the canon of the New Testament, the doctrinal and ethical interpretations which these books 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 freshman students. Not offered 1990-91.

224 General Epistles. Core. A study of Hebrews, James, I & II Peter, and Jude in their historical setting, theological emphases and present relevance. Not open to freshman students. Not offered 1990-91.

311 History of Israel.* A study of the historical periods from the patriarchs through Alexander the Great. Special attention will be given to five crucial areas: Patriarchs, Exodus, Conquest, Monarchy, and Post-Exilic Period. A central goal of this course is to evaluate critically the most recent research on the history of Israel. Prerequisite: a biblical core course. Not offered 1990-91.

312 Critical Methods in Old Testament Study.* 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. Prerequisite: a biblical core course. Not offered 1990-91.

313 Current Issues in Old Testament Study.* S. The special topic will be "Towards an Old Testament Worldview: Creation, Culture, and Society in Ancient Israel." Among the questions to be explored are the following: Is the Old Testament just about God and salvation, or is it fundamentally concerned with reality as a whole? What is the role of man and woman in the cosmos? How are nature and culture, the constant and the evolving related? Are the forms of Old Testament culture and society (patriarchy and polygamy for instance) in some way normative for Christians? How did Israel portray reality, and what implications does this have for constructing a worldview for our scientific age? *Mr. R. Van Leeuwen.*

321 The Intertestamental Period.* S. A study of the history, theological developments, and literature of Judaism from the return from exile through the time of Christ, as a background for understanding the New Testament. Literature studied will include the Apocrypha and Dead Sea Scrolls. Prerequisite: a biblical core course. *Mr. K. Pomykala.*

322 Critical Methods in New Testament Study.* F. 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. Prerequisite: a biblical core course. *Mr. L. Vos.*

323 Current Issues in New Testament Study.* A study of selected issues and de-

bates that are at the forefront of current New Testament investigation. Prerequisite: a biblical core course. Not offered 1990-91.

SYSTEMATIC-HISTORICAL STUDIES

201 Basic Christian Theology. F and S, core. An introduction to the methods and concepts of systematic theology, to the range of historic Christian and Reformed doctrines (such as God, creation, redemption, Spirit and church, and last things), and to present-day challenges in creative Reformed thought. Not open to freshman students. *Staff.*

231 The Doctrine of God. Core. This course is designed to enable students to examine Christian and Reformed concepts of God in considerable depth, and in the contexts of modern academic discussion and debate. Topics include: the attributes of God in current discussion and debate; the God of good, power, and evil; the idea of the God who is three-in-one. Not open to freshman students. Not offered 1990-91.

232 The Doctrine of Creation. Core. This course investigates the Christian teaching about the creation of the world. Such themes as the following will be considered: the interpretation of Genesis 1 and 2, creation out of nothing, creation versus evolution, the goodness of creation and the problem of evil, the image of God, the cultural mandate and the idea of stewardship, and the eclipse of creation in modern thought. Not open to freshman students. Not offered 1990-91.

233 The Doctrine of Christ and Reconciliation. S, core. The main goals of this course are to provide students with opportunity to examine and reflect upon historic and Reformed doctrines of the person and works of Christ in the contexts of contemporary analytic thought and current biblical theology. Topics will include: Christ as God and man in current discussion; New Testament Christology and the current debates; Reformed Christology in the making. Not open to freshman students. *Mr. J. Schneider.*

234 The Doctrine of the Holy Spirit and Church. Core. A study of the biblical teachings, confessional formulations, theological reflections, and experiential impact of the person and work of the Holy Spirit in the life of believing communities. With Pentecost as the crucial historical-redemptive event launching the onward movement of the church, a biblical, confessional, and

theological study of the structures, mandates, and ministries of the many churches which make up the one Church. Prerequisite: biblical studies core course. Not open to freshman students. Not offered 1990-91.

235 Eschatology. Core. A study of Christian teachings concerning "end times" and "last things"—their biblical basis, historical formulations, and contemporary relevance. Among the topics covered are "the signs of the times, the return of Christ, the final judgment, the resurrection of the body, and eternal life—all within the context of the continuity and discontinuity of the future with the past and present. Millennialist and dispensationalist issues are critically analyzed both historically and theologically, as well as the societal impact of such movements as utopianism, gnosticism, and eschatological indifferentism. Prerequisite: biblical studies core course. Not open to freshman students. Not offered 1990-91.

241 General Church History. F, core. A survey of the history of the Christian church from its beginning to the present time, noting deviations from apostolic faith and practice, the interplay with the political, the great church councils, the crises that emerge, divisions and reunions, and the confluence of forces that determine the complexion of the Christian church today. Not open to freshman students. *Mr. J. Schneider.*

242 American Religious History.* Core. A consideration of the religious history of America 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 freshman students. Not offered 1990-91.

301 Christianity and Culture. 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 freshman students. *Staff.*

331 The Doctrine of Revelation.* Core. This course is designed to help students to understand and develop a Reformed concept of Christian revelation in the context of modern intellectual culture. Prerequisite:

sites: 103 and 201, or permission of the instructor. Not offered 1990-91.

332 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.*

341 Early Christian Theology.* F, 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.*

342 Medieval Theology.* Core. A study of main themes in western Christian theology in the Augustinian, scholastic, spiritualist, conciliar, and nominalist traditions, with special reference to Anselm, Thomas, Gerson, Marsilius of Padua, Ockham, and various reactions to them. The course will focus on similar and contrasting views of grace, faith, atonement, and election; authority, Scripture, church, and sacraments; papacy and society; God, religion, and the knowledge of God, and will point to the "Reformation in medieval perspective." Prerequisites: 103 and 201, or permission of the instructor. Not offered 1990-91.

343 Reformation Theology.* F, 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 freshman students. *Mr. P. Holtrop.*

344 Enlightenment Theology.* Core. This course is a study of how the Enlightenment of the 18th century affected post-Reformation theology and transformed its major themes. Attention is paid especially to major thinkers and to the interaction of philosophy and theology in this period. Prerequisites: 103 and 201 or permission of the instructor. Not offered 1990-91.

345 Contemporary Theology.* 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. Not offered 1990-91.

WORLD RELIGIONS AND MISSIONS

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. R. Plantinga.*

251 A Theology of World Religions. F, core. A study dealing with the origin, nature, and universality of "religion"; the similarities as well as the radical differences among religious phenomena observable in human society. Some contemporary attempts to account for these phenomena, such as those of Karl Barth, Johan H. Bavinck, Hendrik Kraemer, John Hick, Hans Küng, and Houston Smith will be studied and evaluated as will the contemporary attempt of Christian ecclesial organizations to engage in "dialogue with people of living faiths." Prerequisites: 103 and 201. *Mr. R. Plantinga.*

252 Theology of Mission. A survey of biblical material pertaining to mission. These materials are used in evaluating the contemporary problems of mission: i.e., renaissance non-Christian religions, ecumenism, mission in the ferment of social revolution. Not open to freshman students. Not offered 1990-91.

253 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 freshman students. *Staff.*

351 World Religions.* S. 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 freshman students. *Mr. R. Plantinga.*

352 Judaism.* A study of the major developments in Jewish life, practice, and thought beginning with the period of Ezra and extending to the contemporary period. Included in this study will be the period during which the Mishnah and the Talmud developed, Moses Maimonides, the representative of the medieval period, the three main groups in North American Judaism—Orthodox, Conservative, and Reform—the Holocaust, Zionism and the generation of the State of Israel, the calendar of Judaism, and the question of Jewish-Christian dialogue. Prerequisite: 251 or permission of the instructor. Not offered 1990-91.

353 Islam.* A study of this world religion which originated in Mecca in the first half of the seventh century through the prophet / messenger, Muhammed. Included in this study will be the origin of Islam, the role of Muhammed, the Quran—the revelation of God's will—the rapid growth of Islam in the seventh century, the theological flowering of Islam in the medieval period, the renewal of Islam in the contemporary world. Prerequisite: 251 or permission of the instructor. Not offered 1990-91.

354 Hinduism and Buddhism.* A study of the total perspective for life which is operative in Hinduism and Buddhism, and is embodied in the moral action, cultic practices, ideology and communal life of the groups which make these religious responses. In this study Hindu and Buddhist sacred literature and case studies of Hindus and Buddhists will be examined to ascertain the nature of the self, the nature of reality, the disciplines which are useful to remove the impediments which prevent the experience of reality, and the life-style which is appropriate to those who experience reality in these two religious responses. Prerequisite: 251 or permission of the instructor. Not offered 1990-91.

355 **New Religious Movements.*** A study of the emergence of new religious movements in various regions of the world. Included in this study will be an examination of the cause(s) of their emergence; the role of charismatic leaders in their emergence; their relation to "established" religious movements and organizations; their techniques for propagation; their record of growth and development; and the response of Christian missions and civil governments to them. Prerequisite: 251 or permission of the instructor. Not offered 1990-91.

SEMINARS

359 **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. *Staff.*

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 **Theological and Philosophical Hermeneutics.** This course is an intensive study of the theory and methods of biblical interpretation developed in the context of modern theology and philosophy. Questions about language and events, experience and significance, and authority and community comprise the core of this course. *Staff.*

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. *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 advisor. *Staff.*

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 **The Most Revealing Book of the Bible.** Mr. L. Vos.

W11 **Genesis 1-11: Murder, Monsters, and Madness.** Mr. T. Eves.

W12 **Daughters of the Church.** Ms. R. Tucker.

W13 **Bandits, Prophets, and Messiahs: The World of Jesus and the First Christians.** Mr. K. Pomykala.

IDIS W53 **Worldviews on Review.** Mr. G. Spykman.

Sociology and social work

*Professors G. De Blaey (chair), P. De Jong (director of social work), H. Holstege, R. Rice,
T. Rottman, W. Smit, D. Wilson*

Associate Professors H. Allen, J. Nielsen

*Assistant Professors C. Kreykes Brandsen, (social work practicum coordinator), **M. Loyd-Paige,
M. Zwaanstra*

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 theory and practice principles necessary to prepare one for generalist professional social work practice. Programs in the department may lead to a departmental major in sociology, a group major in criminal justice, a major in social work leading to a Bachelor of Social Work (B.S.W.) degree, and a minor in social work.

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 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, 240, 306, 313, 360, 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 332. This 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 advisor for this program is Mr. T. Rottman.

The major in social work leading to a B.S.W. degree consists of eleven courses: Social Work 240, 250, 320, 350, 360, 361, 370, 371, 372, and 2 units of 380. These courses prepare one for entry level social work positions involving generalist practice with individuals, families, groups, organizations and communities. Students who wish to earn the B.S.W. degree must apply for admission to the B.S.W. program by February 15 of their sophomore year. Some students may complete their community-based practicum courses through the

Chicago Metropolitan Center. A fuller description of the B.S.W. program requirements is given both on pages 78-79 of this catalog and in the Social Work Student Handbook which can be obtained at the departmental office (College Center 210).

The minor in social work consists of six courses: either Psychology 151 or Sociology 151, Social Work 240, 250, 350, 360, and 361.

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 sociology as a body of knowledge dealing with group relationships as these affect both the individual and society. An attempt is made to show how a sociological perspective offers a rational interpretation of issues current in our society. *Staff.*

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.*

250 Diversity and Inequality in North American Society. F and S. An analysis of the social structure of diversity and the social processes of inequality in contemporary North American society. The major objectives of the course are to study the interrelationships of gender, race, and class and to develop an understanding of current social conditions through inclusive analysis of gender, race-ethnic, and class relations. Emphasis is placed on patterns and consequences of discrimination and oppression. *Ms. M. Loyd-Paige.*

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 contemporary issues as community development and planning. *Mr. H. Allen.*

304 The Family.* F. 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.* S. An analysis of deviant behavior: its causes, manifestations, prevention, and programs of control. Special attention is given to the role of social norms in generating as well as controlling deviance. Emphasis is put on ways in which social structures generate and label deviance. Implications are drawn for various institutions, particularly the school and the church. *Staff.*

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. *Mr. R. Rice.*

309 Sociology of Education.* F. 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. *Mr. H. Allen.*

310 Social Psychology.* F and S. Human behavior as a consequence of psychological make-up and 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 Blaeu.*

311 Sociology of Religion.* S. A study of the organizational forms of religion, with special attention being given to the influence and effectiveness of the church in its function as a social institution and to the social influences which have, in turn, affected the church. *Mr. W. Smit.*

312 The Sociology of Community.* 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. Utopian dreams of ideal communities are contrasted with the types of communities actually found in primitive, agrarian, and industrial societies. Not offered 1990-91.

313 The Criminal Justice System.* F and S. 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. The course will begin with a theoretical examination of social problems generally. Various contemporary social problems will be discussed with one selected for major emphasis. *Staff.*

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 Blaeu.*

316 Social Gerontology.* S. A cross-cultural examination of how various societies react toward the elderly. Specific substantive 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 Social Research.* F and 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.*

380 Internship in Criminal Justice. F and S. Senior Criminal Justice students are placed each semester in a Juvenile or Criminal Justice Agency: law enforcement, the courts, or corrections. An on-site supervisor monitors and directs the student's day-to-day development in knowledge, skill, and personal growth. These experiences are complemented by regularly scheduled seminars conducted by the college instructor. Prerequisite: Senior status and completion of internship application. *Mr. T. Rottman.*

390 Independent Study. F, I, S. Prerequisite: permission of the department chair and of the instructor. *Staff.*

395 Seminar.

SOCIAL WORK COURSES

240 Introduction to Social Work. F and S. A study of the development and current nature of social work as a profession aimed at delivering social welfare services. Students are introduced to the history of social welfare, practice settings, professional roles, and value issues in social work to increase awareness of the profession and to aid them in considering social work as a career. Throughout, students will explore how their Christian faith interrelates with the profession. *Mr. J. Nielsen.*

250 Diversity and Inequality in North American Society. See Sociology 250 for description.

320 Social Research. See Sociology 320 for description.

350 Human Behavior and the Social Environment. F and S. A study of the person in her / his environment using a systems-based ecological model of human behavior. Knowledge about persons as biological, psychological, social, cultural, and spiritual creatures is integrated as the "person" is followed through the life cycle. Theoretical frameworks from prerequisite courses are integrated to enable students to assess micro and macro influences on human behavior. Prerequisites: Biology 115, Psychology 151, Sociology 151, and Social Work 240, 250. Ms. C. Kreykes Brandsen.

360 Social Welfare Policy. F. An analysis of policy development and implementation within the social welfare system. Social welfare institutions and policy areas which affect the delivery of current social work services are examined along with the implications of the social welfare system for minorities and women. Prerequisite: 240. Staff.

361 Child Welfare and Family Services. S. A study of social policy and service delivery in child welfare and family service agencies. Whereas 360 works at educating students toward an analytic framework for evaluating the development and implementation of social welfare policy in general, this course integrates a descriptive understanding of child welfare policy, policy practice, and practice procedures at the agency level in an area in which many B.S.W. students take practicum work and find entry level employment. Prerequisites: 240 and 360. Mr. J. Nielsen.

370 The Helping Interview. F and S. A course to teach students the basic skills necessary to conduct a helping interview. Students participate in videotaped role plays. The course also contains contextual material about ethical issues, a Christian view of relationship and interviewing, and interviewing people from different backgrounds. Prerequisite: 240, 350 (or concurrent enrollment). Mr. P. De Jong.

371 Social Work Practice With Individuals and Families. F. A study of generalist social work practice within a "human behavior and social environment" and problem solving context. This course focuses on case management skills, interventions, and issues with individuals and families. Special attention is given to working with clients from different backgrounds. Prerequisites: 240, 320, 350, 360 and 370. Mr. P. De Jong.

372 Social Work Practice With Groups and Communities. S. A study of generalist social work practice skills, interventions, and issues with groups and communities.

Prerequisites: Communications 240, Social Work 240, 320, 350, 360 and 370. (Students planning to participate in the Chicago Metropolitan Center should enroll in their junior year.) Staff.

380 Social Work Practicum. F and S. Students are placed in a community agency (minimum of 200 hours per unit credit) under the supervision of a professional social worker. Students will engage in several social work roles and activities to continue to develop generalist practice skills and knowledge of the profession. A weekly on-campus seminar is also required. Prerequisites: concurrent enrollment in 371 and 372, admission to the B.S.W. program, and satisfactory completion of the practicum admission process. Ms. C. Kreykes Brandsen, Mr. J. Nielsen, Staff.

GRADUATE COURSES

501 School in Community. Summer. 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 advisor. Staff.

JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W10 The Planned Family. Mr. W. Smit.

W11 Nigerian Interim: Perspectives on Africa. Off campus. Mr. R. Rice, Mr. D. Wilson.

W12 Homelessness in the United States. Mr. H. Holstege, Mr. D. Smalligan.

W13 Vocationally Related Issues in Criminal Justice. Mr. T. Rottman.

W14 "I Want to Work With Children . . ." Mr. J. Nielsen.

W15 Food and Culture. Ms. M. Loyd-Paige.

W50 Sociology of Work and Occupations. Mr. H. Allen.

W51 Loss and Grief. Ms. C. Brandsen.

Spanish

Professors Y. Byam (chair), S. Clevenger, E. Cortina, E. Greenway
Assistant Professors D. Cardoso, M. Bierling, J. Koene, D. Lúcar
Instructors C. Johnson, C. McGrath, D. Zandstra

PROGRAMS FOR STUDENTS wishing to major in Spanish are worked out individually by the faculty advisor. 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; may include 123 or 201 and 202; and must include 215, 216, 217, 218, and four 300-level literature courses. Six-course minors are also possible and must include 215, 216, 217 and 218.

The Spanish secondary teacher education major requires nine college-level courses including 215, 216, 217, 218, 360, and one from 371, 372, or an interim abroad. The minor requires 215, 216, 217, and 218. The advisor for these programs is Ms. Ynés Byam. The Spanish component of the three-minor elementary education program requires 215, 216, 217, 218, 360, and 373. The advisor for the three-minor elementary education program and the bilingual education program is Ms. Edna Greenway.

Students in teacher education, secondary majors and minors, the three-minor elementary and bilingual education programs must pass a Spanish proficiency examination prior to the teaching internship. The examination is offered twice each school year, during October and March; further information is available from the Spanish Department.

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 foreign language requirement for a bachelor's degree. An advanced program for Spanish majors and minors is also available in Spain. However, all students whose major program is Spanish (including those with group majors of which Spanish is a part) must take their last Spanish course on campus. The advisor for these programs is Ms. Sandra Clevenger.

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. *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 study of conversation, grammar, vocabulary, and idioms to develop competence in speaking idiomatic Spanish. The emphasis is on improved pronunciation and fluency through conversation, debates, and oral presentations. Prerequisite: 202 or its equivalent. *Ms. Y. Byam, Ms. J. Koene.*

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. *Ms. J. Koene.*

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. *Staff.*

LITERATURE

217 **Readings in Spanish Literature.*** S. An introduction to the major writers and movements in Spanish literature from the Middle Ages to the present. Conducted in Spanish. Prerequisite: 202. *Ms. D. Cardoso, Mr. C. Johnson.*

218 **Readings in Latin American Literature.*** F. 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. *Ms. D. Cardoso, Mr. C. Johnson.*

303 **The Spanish Novel.*** S. 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 1990-91.

305 **Spanish Poetry.*** S. 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. *Ms. S. Clevenger.*

306 **Latin American Poetry.*** F. 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 1990-91.

307 **The Latin American Novel.*** F. 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. *Ms. D. Cardoso.*

309 **Spanish Drama.*** S. A study of the dramatic expression of Spain in the Golden Age and through the post-Civil-War era. Conducted in Spanish. Prerequisite: 217. Not offered 1990-91.

359 **Seminar in Principles and Practices in Secondary Spanish Teaching.** S. A course in perspectives on, principles of, and practices in the teaching of Spanish on the secondary level. This course should be taken concurrently with Education 349: Directed Teaching. Before taking this course, students must pass the Spanish Department language exam and complete Education 301 and 303. *Ms. E. Greenway.*

CIVILIZATION

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.

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.

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. *Ms. E. Greenway.*

390 **Independent Study.*** F, I, S. Prerequisite: permission of the department chair.

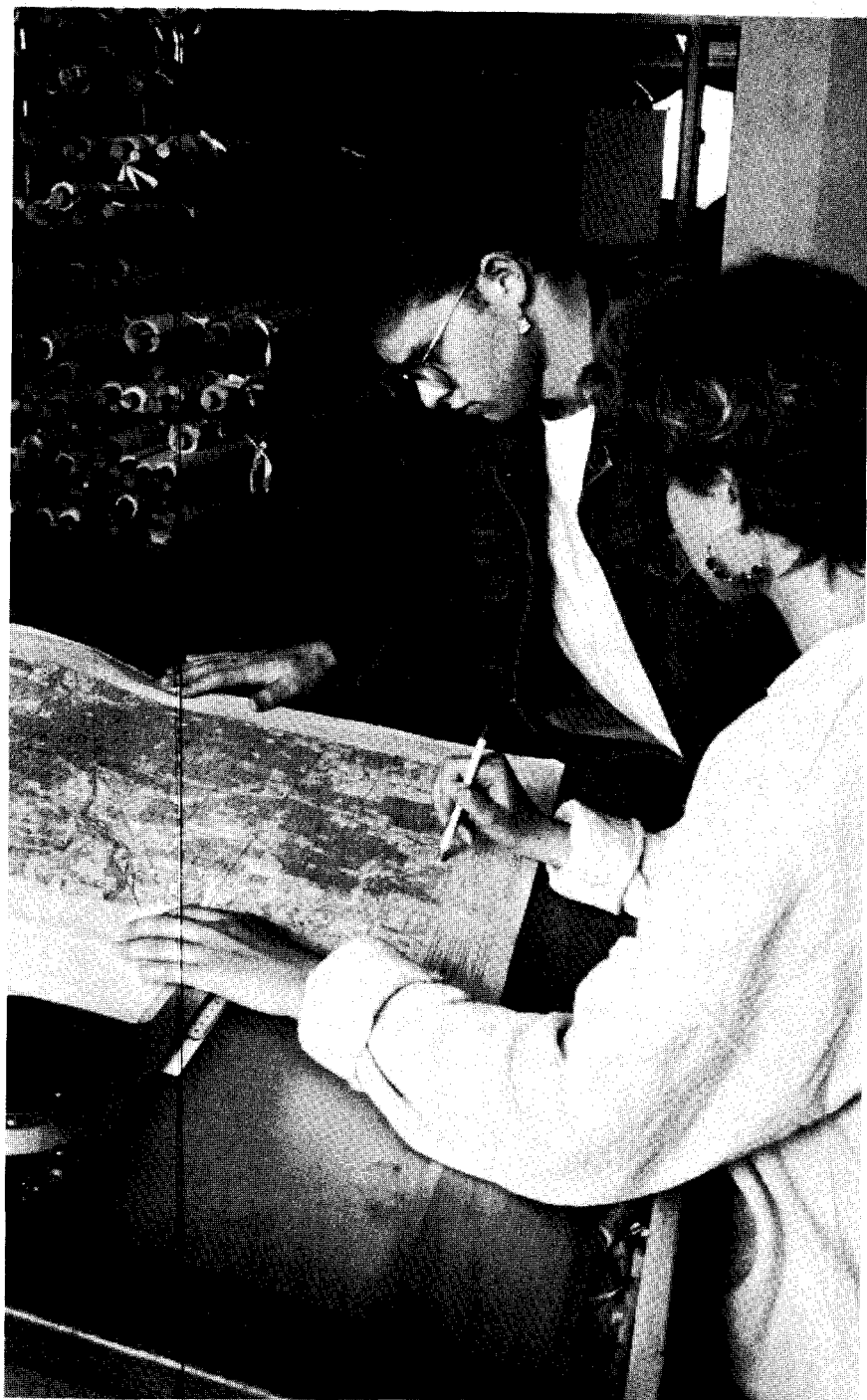
395 **Seminar.***

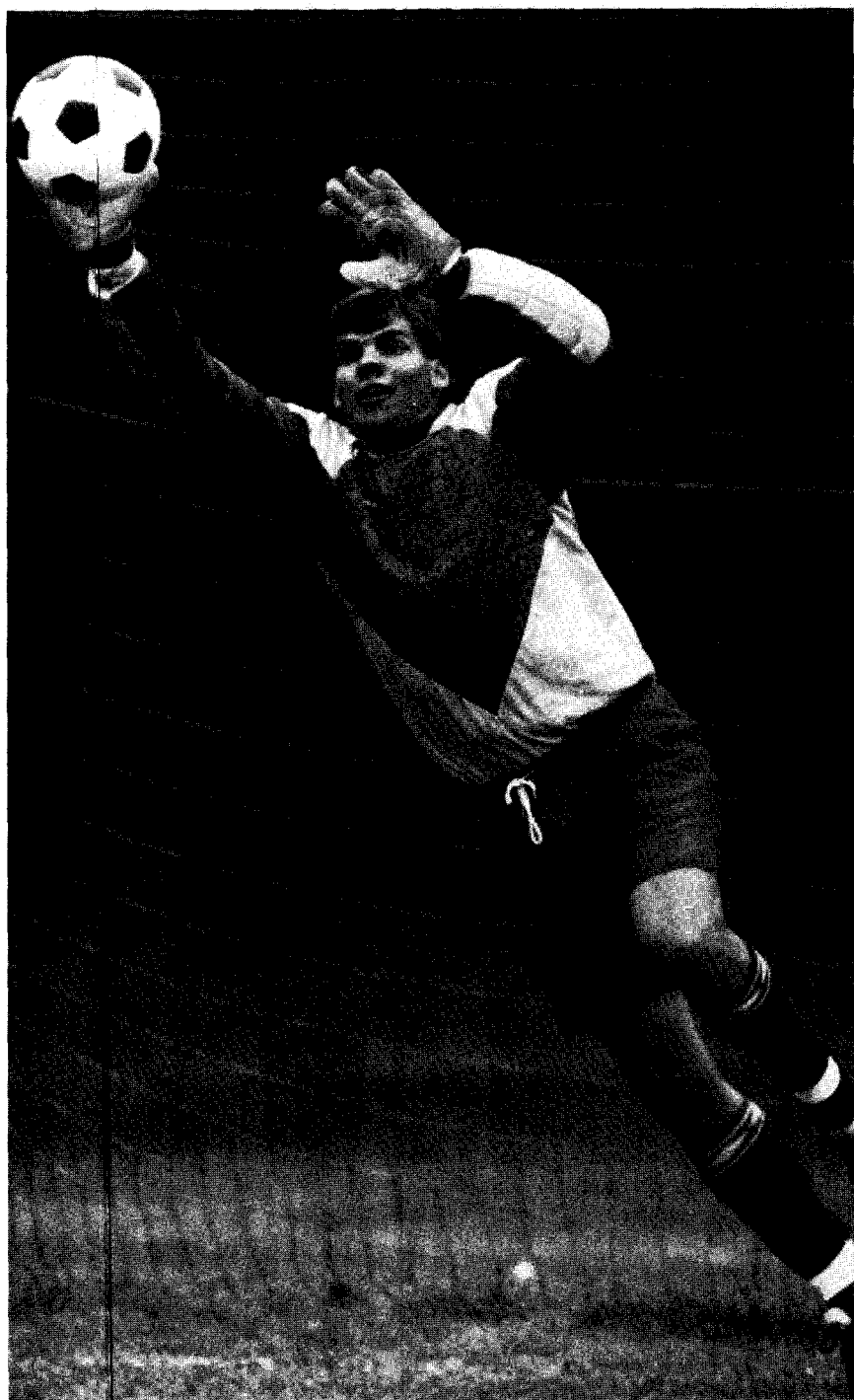
JANUARY 1991 INTERIM

A catalog with the descriptions of all interim courses is available after October 1990.

W50 **Spanish Interim in Costa Rica.** Off campus. *Ms. Y. Byam.*

100 **Introduction to Spanish Culture.** *Ms. D. Cardoso.*





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- Lionel L. Basney, M.A., Ph.D. (Rochester, 1968, 1971)
Professor of English
- John D. Beebe, M.A. (South Dakota, 1966), Ph.D. (Chicago, 1970)
Professor of Biology
- Sharon J. Benner, M.S.N. (Case Western Reserve, 1984)
Adjunct Assistant Professor of Nursing

- Ronald L. Blankespoor, Ph.D. (Iowa State, 1971)
Professor of Chemistry
- Patricia Vanden Berg Blom, M.A., Ph.D. (Michigan, 1975, 1982)
Associate Professor of Communication Arts and Sciences
- Donald L. Boender, M.A. (Michigan, 1965)
Dean of Men
- 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
- William J. Boer, M.S. (Indiana, 1979), M.B.A. (Southern California, 1984)
Vice President for Administration and Finance
- Edgar G. Boevé, M.S.D. (Michigan, 1954)
Professor of Art
Chair of the Department of Art
- **Martin Bolt, M.A., Ph.D. (Michigan State, 1967, 1969)
Professor of Psychology
- Robert Bolt, M.A. (Michigan, 1953), Ph.D. (Michigan State, 1963)
Professor of History
- Helen Bonzelaar, M.A. (Western Michigan, 1964), Ph.D. (Michigan State, 1984)
Professor of Art
- Bette D. Bosma, M.A., Ph.D. (Michigan State, 1973, 1981)
Professor of Education
- Hessel Bouma III, Ph.D. (Texas, 1975)
Professor of Biology
- James Bradley, Ph.D. (Rochester, 1974), M.S. (Rochester Institute of Technology, 1982)
Professor of Mathematics and Computer Science
- Cheryl Kreykes Brandsen, M.S.W. (Michigan, 1981)
Assistant Professor of Social Work
- Al D. Bratt, M.S. (Michigan State, 1957), Ph.D. (Cornell, 1964)
Professor of Biology
- James D. Bratt, Ph.D. (Yale, 1978)
Professor of History
- Kenneth D. Bratt, M.A., Ph.D. (Princeton, 1973, 1985)
Professor of Classical Languages
Chair of the Department of Classical Languages
- Wallace H. Bratt, M.A., Ph.D. (Michigan, 1956, 1966)
Professor of Germanic Languages
- Daryl M. Brink, M.A. (Western Michigan, 1968), Ph.D. (Michigan State, 1972)
Professor of Mathematics and Computer Science
- John H. Brink, M.S., Ph.D. (Purdue, 1972, 1974)
Professor of Psychology
- Herbert J. Brinks, M.A., Ph.D. (Michigan, 1961, 1965)
Curator, Colonial Origins Collection
- Randall J. Brouwer, M.S.E.E. (Illinois-Urbana, 1988)
Assistant Professor of Engineering
- W. Dale Brown, M.A. (Houston-Clear Lake, 1978), Ph.D. (Missouri, 1987)
Associate Professor of English
- Conrad J. Bult, M.A., M.A.L.S. (Michigan, 1962, 1965)
Assistant Library Director for College-Related Matters
- Linda K. Burden, M.S.N. (Wayne State, 1979)
Assistant Professor of Nursing

- Randall J. Buursma, M.A. (Michigan State, 1986)
Visiting Instructor in Communication Arts and Sciences
- Ynés M. Byam, M.A., Ph.D. (Michigan State, 1977, 1986)
Professor of Spanish
Chair of the Department of Spanish
- Randall L. Bytwerk, M.A., Ph.D. (Northwestern, 1973, 1975)
Professor of Communication Arts and Sciences
Chair of the Department of Communication Arts and Sciences
- Joel W. Cannon, M.E. (Virginia, 1976), P.E. (Idaho, 1977), Ph.D. (Illinois, 1989)
Assistant Professor of Physics
- Dinora Cardoso, M.A. (Southern Florida, 1985)
Assistant Professor of Spanish
- Barbara Carvill, M. A., Ph.D. (Toronto, 1972, 1981)
Professor of Germanic Languages
Chair of the Department of Germanic Languages
- James A. Clark, M.A., Ph.D. (Colorado, 1974, 1977)
Professor of Geology
- Kelly J. Clark, M.A. (Western Kentucky State, 1980), M.A., Ph.D. (Notre Dame, 1983, 1985)
Associate Professor of Philosophy
- Sandra K. Clevenger, M.A. (Michigan State, 1974), Ph.D. (New York, 1987)
Professor of Spanish
- David A. Cook, M.S.Acc. (Western Michigan, 1979), C.P.A.
Associate Professor of Business
- Dale J. Cooper, B.D. (Calvin Theological Seminary, 1968)
College Chaplain
- Gordon L. De Blaeys, M.A., Ph.D. (Western Michigan, 1967, 1970)
Professor of Sociology
Chair of the Department of Sociology and Social Work
- Marilyn E. De Boer, M.S.W. (Denver, 1972)
Dean of Women
- Peter P. De Boer, M.A. (New Jersey State, 1952), M.A. (Iowa, 1961), Ph.D. (Chicago, 1968)
Professor of Education
- James H. De Borst, M.A., Ph.D. (Michigan, 1965, 1972)
Professor of Political Science
- David H. De Heer, Ph.D. (Arizona, 1972)
Professor of Biology
- Jeanette Bult De Jong, M.Ed. (Toronto, 1973)
Vice President for Student Affairs
- Peter Y. De Jong, M.A., Ph.D. (Western Michigan, 1969, 1972), M.S.W. (Michigan State, 1986)
Professor of Social Work
Director of Social Work
- Richard G. De Jong, S.M., Sc.D. (Massachusetts Institute of Technology, 1974, 1976)
Professor of Engineering
- Roger L. De Kock, Ph.D. (Wisconsin, 1970)
Professor of Chemistry
- William D. Dennison, M.Div., Th.M. (Westminster Theological Seminary, 1976, 1980)
Visiting Assistant Professor of Philosophy
- †Bert De Vries, B.D. (Calvin Theological Seminary, 1960), M.A., Ph.D. (Brandeis, 1965, 1967)
Professor of History

- **Robert L. De Vries, M.A., Ph.D. (Michigan, 1964, 1974)
Professor of Political Science
- Derald D. De Young, M.M. (Eastman, 1965), Ph.D. (Minnesota, 1975)
Professor of Music
- Anthony J. Diekema, M.A., Ph.D. (Michigan State, 1958, 1965)
President
- David J. Diephouse, M.A., Ph.D. (Princeton, 1971, 1974)
Professor of History
Chair of the Department of History
- Evelyn J. Diephouse, M.Ed. (Rutgers, 1976)
Registrar
Director of Academic Advising
- John W. Dodge, M.A., Ph.D. (Wisconsin, 1974, 1981)
Professor of Economics
- William R. Doezema, M.A., Ph.D. (Kent State, 1978)
Visiting Professor of History
- +Mary Molewyk Doornbos, M.S. (Michigan, 1983)
Associate Professor of Nursing
- Edward R. Douma, M.A. (Western Michigan, 1973)
Assistant Professor of Physical Education
- Johanna Z. Duyst, M.A.L.S. (Michigan, 1973)
Librarian
- Eugene R. Dykema, M.B.A. (Chicago, 1968), Ph.D. (Notre Dame, 1983)
Professor of Economics
Chair of the Department of Economics and Business
- Allen W. Emerson, M.A. (North Carolina-Chapel Hill, 1965)
Academic Support Program
- Edward E. Ericson, Jr., M.A., Ph.D. (Arkansas, 1963, 1967)
Professor of English
Chair of the Department of English
- Edward E. Ericson III, M.A. (Indiana, 1988)
Instructor in History
- Sharon A. Etheridge, M.S.N. (Grand Valley State, 1989)
Assistant Professor of Nursing
- Terry L. Eves, M.A.R. (Westminster Seminary, 1980)
Assistant Professor of Religion and Theology
- Cheryl J. Feenstra, M.S.N. (Wayne State, 1979)
Assistant Professor of Nursing
- R. John D. Ferdinands, Ph.D. (Purdue, 1988)
Assistant Professor of Mathematics
- Glenn W. Fetzter, M.A. (Auburn, 1982), M.Phil., Ph.D. (City University of New York, 1984, 1988)
Assistant Professor of French
- Earl D. Fife, M.A. (North Carolina-Greensboro, 1973), Ph.D. (Wesleyan, 1977)
Professor of Mathematics
- Mary E. Flikkema, M.S.N. (Grand Valley State, 1989)
Assistant Professor of Nursing
- Robert S. Fortner, M.A. (Indiana, 1972), Ph.D. (Illinois, 1978)
Professor of Communication Arts and Sciences

- Susan V. Gallagher, M.A., Ph.D. (Emory, 1981, 1982)
Associate Professor of English
- Alan I. Gebben, M.A.T. (George Peabody and Vanderbilt, 1955), M.S., Ph.D. (Michigan, 1959, 1965)
Professor of Biology
- Bethany Gordon, M.S.N. (Wayne State, 1967)
Adjunct Assistant Professor of Nursing
Acting Chair of the Department of Nursing
- Terry M. Gray, Ph.D. (Oregon, 1985)
Associate Professor of Chemistry
- Edna C. Greenway, M.A. (Texas Christian, 1972), Ph.D. (Michigan State, 1985)
Professor of Spanish
- Roger D. Griffioen, Ph.D. (Purdue, 1960)
Professor of Physics
Dean for the Natural Sciences and Mathematics and for the Contextual Disciplines
- Marianne Gritter, M.S. (San Jose State, 1986)
Assistant Professor of Nursing
- Stanley L. Haan, Ph.D. (Colorado, 1983)
Associate Professor of Physics
- John E. Hamersma, M.S.M., S.M.D. (Union Theological Seminary, New York, 1952, 1961)
Professor of Music
College Organist
- Lee P. Hardy, M.A., Ph.D. (Duquesne, 1978, 1988), M.A. (Pittsburgh, 1980)
Professor of Philosophy
- John E. Hare, B.A. hons. (Balliol College, 1971), Ph.D. (Princeton, 1975)
Professor of Philosophy
- George Harris, M.A. (Michigan, 1959), Ph.D. (Northwestern, 1971)
Professor of Classical Languages
- Janice B. Heerspink, M.A. (Michigan State, 1981)
Academic Support Program
- Cornelius P. Hegewald, M.A., D.A.G. (Michigan State, 1964, 1967)
Professor of Germanic Languages
- Lawrence R. Herzberg, M.A. (Indiana, 1980)
Assistant Professor of Chinese
- **Donald R. Hettinga, M.A., Ph.D. (Chicago, 1977, 1983)
Professor of English
- Christopher T. Hodgkins, M.A., Ph.D. (Chicago, 1982, 1988)
Assistant Professor of English
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Professor of Engineering
- Thomas B. Hoeksema, M.A., Ph.D. (Michigan State, 1972, 1975)
Professor of Education
- Roland G. Hoksbergen, M.A., Ph.D. (Notre Dame, 1981, 1986)
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- David J. Holquist, M.A. (Michigan, 1967), Ed.S. (Michigan State, 1974)
Professor of Communication Arts and Sciences
- Henry Holstege, Jr., M.A., Ph.D. (Michigan State, 1958, 1966)
Professor of Sociology
- Philip C. Holtrop, B.D. (Calvin Theological Seminary, 1958), Ph.D. (Harvard, 1988)
Professor of Religion and Theology

- Ralph J. Honderd, M.A., Ph.D. (Michigan State, 1966, 1985)
Professor of Physical Education
Director of Athletics—Men
- Douglas A. Howard, M.A., Ph.D. (Indiana, 1982, 1987)
Assistant Professor of History
- Carl J. Huisman, M.F.A. (Michigan State, 1967)
Professor of Art
- Gertrude A. Huizenga, M.A. (Ohio State, 1963), M.Mus., Ph.D. (Michigan State, 1969, 1980)
Associate Professor of Music
- James O.G. Ibe, M.A., Ph.D. (Texas, 1986, 1989); M.B.A. (Amber, 1989)
Assistant Professor of Economics
- Thomas L. Jager, M.S., Ph.D. (Chicago, 1967, 1971)
Professor of Mathematics and Computer Science
- Robert A. Jensen, M.F.A. (Ohio, 1952)
Professor of Art
- Jeffrey S. Johnson, M.A., Ph.D. (Missouri-Columbia, 1983, 1987)
Assistant Professor of English
- L. Carl Johnson, M.H.S. (Auburn, 1983)
Instructor in Spanish
- Anamarie L. Joosse, M.A., Ed.S. (Michigan State, 1971, 1972)
Counselor in the Broene Counseling Center
- Wayne G. Joosse, M.A., Ph.D. (Michigan State, 1965, 1975)
Professor of Psychology
- Carl W. Kaiser, M.Mus. (Catholic University, 1961)
Associate Professor of Music
- Richard T. Karppinen, M.B.A. (Pittsburgh, 1964)
Associate Professor of Business
- *Corrine E. Kass, M.A. (Michigan, 1955), Ph.D. (Illinois, 1962)
Professor of Education
Director of Graduate Studies
- †Gene A. Klaasen, M.A., Ph.D. (Nebraska, 1965, 1968)
Professor of Mathematics
- Beverly J. Klooster, M.S., Ph.D. (Michigan State, 1961, 1972)
Professor of Biology
Chair of the Department of Biology
- Jacoba Koene, M.C.E. (Calvin Theological Seminary, 1980)
Assistant Professor of Spanish
- Kenneth J. Konyndyk, M.A., Ph.D. (Wayne State, 1967, 1970)
Professor of Philosophy
- Allen H. Koop, M.S. (Michigan State, 1973), Ph.D. (Colorado Medical Center, 1981)
Associate Professor of Biology
- Janice B. Koop, M.S. (Michigan State, 1972), Ph.D. (Colorado, 1978)
Professor of Mathematics
- James D. Korf, M.A., M.F.A. (Michigan, 1970, 1982)
Professor of Communication Arts and Sciences
- Myra J. Kraker, M.A. (Michigan State, 1981), Ph.D. (Northwestern, 1987)
Associate Professor of Education
- Albion J. Kromminga, Ph.D. (Minnesota, 1961)
Professor of Physics
- Kenneth W. Kuiper, M.A., M.A., Ed.D. (Michigan, 1955, 1959, 1963)
Professor of English

- Kenneth J. Kuipers, M.B.A. (Michigan State, 1968)
Professor of Business
- Charmaine L.-M. Kyle, M.S.N. (Wayne State, 1988)
Adjunct Assistant Professor of Nursing
- Stephen L. Lambers, M.A., M.A.L.S. (Michigan, 1958, 1969)
Librarian
- James L. Lamse, M.A., Ph.D. (Michigan, 1963, 1975)
Professor of Germanic Languages
- W. David Laverell, M.S., Ph.D. (Lehigh, 1965, 1969), M.A.R., Th.M. (Westminster Seminary, 1978, 1983)
Professor of Mathematics and Computer Science
- D. John Lee, M.S. (Western Washington, 1981), Ph.D. (Kansas State, 1987)
Assistant Professor of Psychology
- Arie Leegwater, Ph.D. (Ohio State, 1967)
Professor of Chemistry
Chair of the Department of Chemistry
- Maureen Gallagher Leen, M.S.N. (Wayne State, 1975), Ph.D. (Michigan State, 1990)
Adjunct Assistant Professor of Nursing
- Sanford C. Leestma, M.A. (Pennsylvania State, 1965), Ph.D. (New Mexico State, 1969)
Professor of Mathematics and Computer Science
- †Laurence L. Louters, M.S. (Minnesota, 1974), Ph.D. (Iowa, 1984)
Professor of Chemistry
- **Michelle R. Loyd-Paige, M.S., Ph.D. (Purdue, 1983, 1989)
Assistant Professor of Sociology
- Philip R. Lucasse, M.A., Ph.D. (Michigan, 1952, 1971)
Professor of Education
- Luis E. Lugo, M.A. (Villanova, 1979), Ph.D. (Chicago, 1989)
Associate Professor of Political Science
- Margaret J. Masson, Ph.D. (Durham, 1988)
Assistant Professor of English
- Jane Penelope Mauger, M.S. (Michigan, 1985)
Adjunct Assistant Professor of Nursing
- Christopher A. McGrath, M.A. (Michigan State, 1990)
Instructor in Spanish
- Gregory F. Mellema, Ph.D. (Massachusetts, 1974), M.B.A. (Michigan, 1978)
Professor of Philosophy
Chair of the Department of Philosophy
- James D. Mellick, M.F.A. (Southern Illinois, 1973)
Associate Professor of Art
- Nancy L. Meyer, M.S. (Arizona, 1979), Ed.D. (Northern Colorado, 1986)
Professor of Physical Education
- Daniel R. Miller, M.A., Ph.D. (North Carolina, 1975, 1987)
Associate Professor of History
- †George N. Monsma, Jr., M.A., Ph.D. (Princeton, 1965, 1969)
Professor of Economics
- Marvin E. Monsma, M.A. (Michigan State, 1961), M.A.L.S. (Michigan, 1967)
Director of the Library
- Beverly H. Morrison, M.A., Ph.D. (Michigan State, 1967, 1984)
Academic Support Program
- Carl T. Mulder, M.A., Ed.D. (Western Michigan, 1964, 1973)
Professor of Education

- Merle R. Mustert, M.M. (Michigan State, 1964)
Associate Professor of Music
- Karen Carlson Muyskens, Ph.D. (Wisconsin-Madison, 1990)
Assistant Professor of Chemistry
- Mark A. Muyskens, Ph.D. (Wisconsin-Madison, 1989)
Assistant Professor of Chemistry
- John T. Netland, M.A. (California State Polytechnic, 1984), Ph.D. (UCLA, 1989)
Assistant Professor of English
- John F. Nielsen, M.S.W. (Michigan, 1972)
Associate Professor of Social Work
- Kathryn J. Niemeyer, B.A. (Calvin, 1977)
Instructor in Nursing
- Richard A. Nyhof, M.S., Ph.D. (Michigan State, 1976, 1981)
Associate Professor of Biology
- **Larry R. Nyhoff, M.S. (Michigan, 1961), Ph.D. (Michigan State, 1969)
Professor of Mathematics and Computer Science
- Barbara K. Olson, M.A. (Minnesota, 1982)
Assistant Professor of English
- Donald Oppewal, M.A. (Michigan, 1951), Ph.D. (Illinois, 1961)
Professor of Education
- Clifton J. Orlebeke, M.A. (Michigan, 1950), Ph.D. (Harvard, 1963)
Professor of Philosophy
- Charlotte F. Otten, M.A. (Michigan, 1969), Ph.D. (Michigan State, 1971)
Professor of English
- Chris S. Overvoorde, M.F.A. (Michigan, 1966)
Professor of Art
- Thomas J. Ozinga, M.A., Ph.D. (Michigan, 1961, 1967)
Professor of Communication Arts and Sciences
- James M. Penning, M.A., Ph.D. (Kentucky, 1974, 1975)
Professor of Political Science
Chair of the Department of Political Science
- Jeffrey R. Pettinga, M.A. (Michigan State, 1968)
Assistant Professor of Physical Education
- Kenneth Piers, B.Sc. hons., Ph.D. (Alberta, 1963, 1966)
Professor of Chemistry
- Alvin C. Plantinga, M.A. (Michigan, 1955), Ph.D. (Yale, 1958)
Adjunct Professor of Philosophy
- Richard J. Plantinga, M.A. (McMaster, 1985)
Assistant Professor of Religion and Theology
- Kenneth E. Pomykala, M.Div. (Calvin Theological Seminary, 1981), M.A. (Claremont Graduate School, 1988)
Assistant Professor of Religion and Theology
- Arden R. Post, M.Ed. (Beaver, 1979), Ed.D. (Cincinnati, 1985)
Associate Professor of Education
- Brian M. Post, M.S.E.E. (Michigan Technological University, 1983)
Assistant Professor of Engineering
- John H. Primus, B.D. (Calvin Theological Seminary, 1957), D.Th. (Vrije Universiteit, Amsterdam, 1960)
Professor of Religion and Theology
Chair of the Department of Religion and Theology
- Anna Greidanus Probes, M.F.A. (Michigan State, 1988)
Assistant Professor of Art

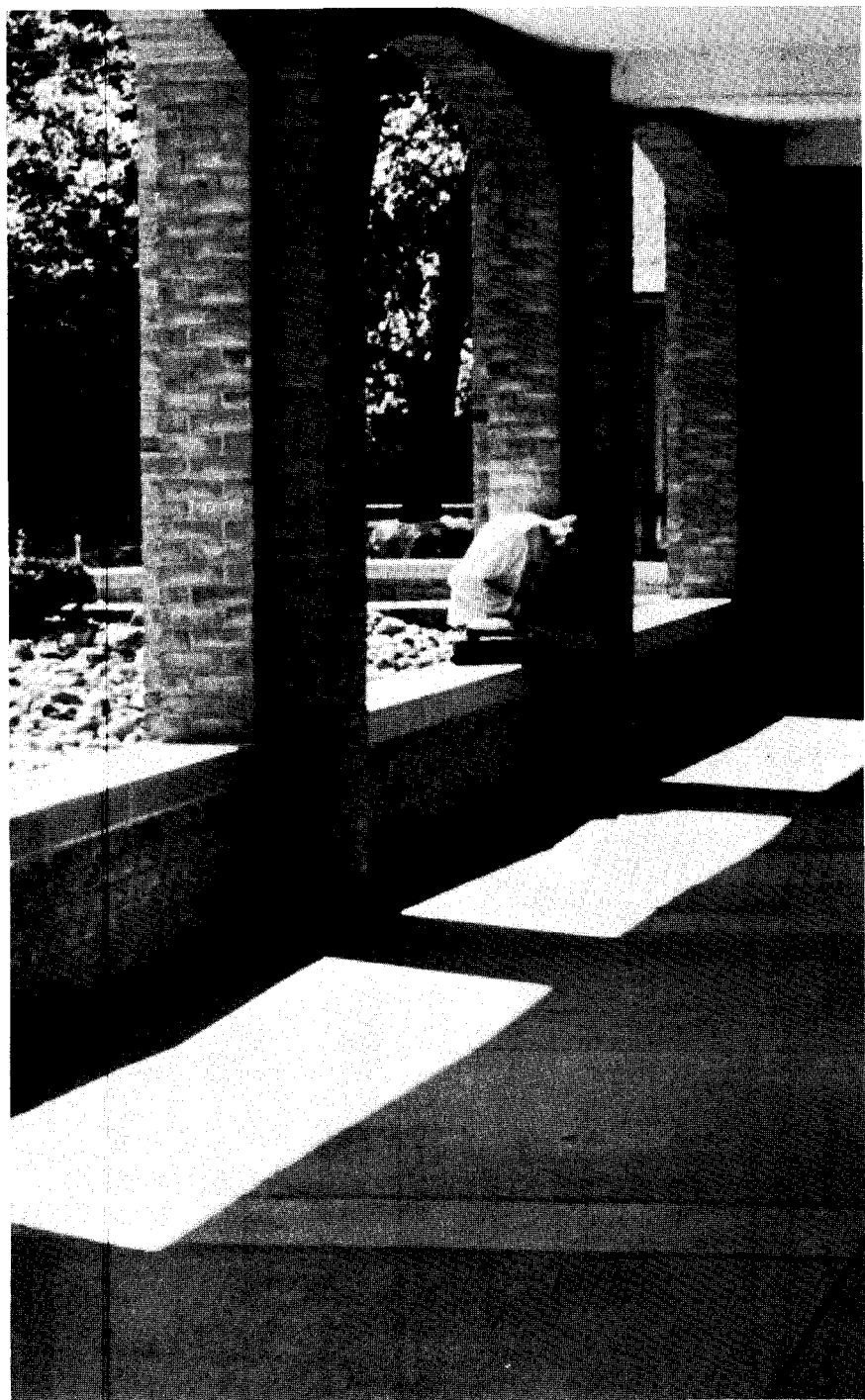
- Donald E. Pruis, M.B.A. (Michigan, 1953), C.P.A.
Professor of Business
- Delvin L. Ratzsch, M.A., Ph.D. (Massachusetts, 1974, 1975)
Professor of Philosophy
- Glenn A. Remelts, M.L.S. (Western Michigan, 1979), M.A. (Kansas State, 1989)
Librarian
- Rodger R. Rice, M.A., Ph.D. (Michigan State, 1962, 1968)
Professor of Sociology
Director of the Social Research Center
- Beth E. Ritsema, B.A., (Calvin College)
Instructor in Mathematics
- Frank C. Roberts, B.D. (Calvin Theological Seminary, 1965), M.A., Ph.D. (Vanderbilt, 1969, 1973)
Professor of History
Dean for the Social Sciences and for Languages, Literature, & Arts
- †Shirley J. Roels, M.B.A. (Michigan, 1977), C.M.A., 1979
Associate Professor of Business
- William D. Romanowski, M.A. (Youngstown State, 1981), Ph.D. (Bowling Green State, 1990)
Assistant Professor of Communication Arts and Sciences
- Theodore A. Rottman, M.A., Ph.D. (Michigan State, 1955, 1965)
Professor of Sociology
- Ruth K. Rus, M.M. (Eastman, 1951)
Associate Professor of Music
- Kurt C. Schaefer, A.M., Ph.D. (Michigan, 1982, 1984)
Associate Professor of Economics and Business
- Gary D. Schmidt, M.A., Ph.D. (Illinois, 1981, 1985)
Associate Professor of English
- John R. Schneider, M.A. (Fuller Theological Seminary, 1976), Ph.D. (Cambridge, 1987)
Associate Professor of Religion and Theology
- Quentin J. Schultze, M.A., Ph.D. (Illinois, 1976, 1978)
Professor of Communication Arts and Sciences
- †Mary C. Schutten, M.A. (California State-Long Beach, 1982)
Assistant Professor of Physical Education
- Allen L. Shoemaker, M.S., Ph.D. (Illinois, 1979, 1980)
Professor of Psychology
- Stephen T. Simpson, M.B.A. (Louisville, 1969), Ed.D. (Indiana, 1973)
Professor of Business
- Carl J. Sinke, M.S., Ph.D. (Purdue, 1951, 1954)
Professor of Mathematics
- Raymond L. Slager, M.S. (Western Michigan, 1970), C.P.A., 1974
Associate Professor of Business
- Howard J. Slenk, M.A., Ph.D. (Ohio State, 1961, 1965)
Professor of Music
- Barbara B. Sluiter, M.A.L.S. (Michigan, 1956)
Librarian
- Corwin E. Smidt, M.A., Ph.D. (Iowa, 1971, 1975)
Professor of Political Science
- J. William Smit, M.A., Ph.D. (Michigan, 1959, 1964)
Professor of Sociology
- Franklin D. Speyers, M.S. (Pratt Institute, 1977)
Associate Professor of Art

- Gordon J. Spykman, Th.B. (Calvin Theological Seminary, 1952), D.Th. (Vrije Universiteit, Amsterdam, 1955)
Professor of Religion and Theology
- Calvin R. Stapert, M.A., Ph.D. (Chicago, 1968, 1973)
Professor of Music
Chair of the Department of Music
- Steven D. Steenwyk, M.S., Ph.D. (Michigan State, 1978, 1980)
Associate Professor of Physics
- LeRoy D. Stegink, M.A., Ph.D. (Michigan State, 1970, 1979)
Professor of Education
Chair of the Department of Education
Director of Teacher Education
- Steven J. Stegink, M.A. (William Paterson College, 1979), Ph.D. (Duke, 1985)
Associate Professor of Science Education and Biology
- R. Scott Stehouwer, M.A., Ph.D. (Wayne State, 1977, 1978)
Professor of Psychology
- William R. Stevenson, Jr., M.A. (East Carolina, 1978), Ph.D. (Virginia, 1984)
Associate Professor of Political Science
- Michael J. Stob, M.S. Ph.D. (Chicago, 1975, 1979)
Professor of Mathematics
- William K. Stob, B.D., Th.M. (Calvin Theological Seminary, 1955, 1970), Ed.D. (Western Michigan, 1975)
Dean of Student Life
- Kathleen H. Storm, M.S. (Indiana, 1976), M.A., Ph.D. (Fuller Theological Seminary, 1979, 1982)
Professor of Psychology
- Roger J. Stouwie, M.A., Ph.D. (Wisconsin, 1968, 1970)
Professor of Psychology
- Charles E. Strikwerda, M.A. (Wisconsin, 1969), Ph.D. (Kentucky, 1977)
Professor of Political Science
- Gloria G. Stronks, M.A. (Western Kentucky, 1968), Ed.D. (Northern Illinois, 1981)
Professor of Education
- Robert S. Sweetman, M.A., Ph.D. (Toronto, 1980, 1988)
Assistant Professor of History
- Mark R. Talbot, Ph.D. candidate (Pennsylvania)
Assistant Professor of Philosophy
- Gary W. Talsma, M.S., Ph.D. (Purdue, 1975, 1986)
Associate Professor of Mathematics
- Robert H. Terborg, M.A., Ph.D. (Michigan State, 1966, 1968)
Professor of Psychology
Chair of the Department of Psychology
- Janna L. Ter Molen, M.S. (Arizona, 1988)
Instructor in Physical Education
- *John P. Tiemstra, Ph.D. (Massachusetts Institute of Technology, 1975)
Professor of Economics
- Peter V. Tigchelaar, M.S., Ph.D. (Illinois, 1966, 1970)
Professor of Biology
- James R. Timmer, M.A. (Michigan, 1964), Ph.D. (Utah, 1974)
Professor of Physical Education
- **John H. Timmerman, M.A., Ph.D. (Ohio, 1971, 1973)
Professor of English
- Steven R. Timmermans, M.A., Ed.S., Ph.D. (Michigan, 1983, 1983, 1985)
Director of Academic Support Program

- G. Dale Topp, M.Mus., Ph.D. (Michigan, 1960, 1967)
Professor of Music
- Debora V. Traas, M.A. (Rutgers, 1977)
Assistant Professor of French
- Glenn E. Triezenberg, M.S.W. (George Williams College, 1973), M.B.A. (Northwestern, 1986)
Counselor in the Broene Counseling Center
- Glen E. Van Andel, M.A. (North Carolina, 1969), Re.D. (Indiana, 1986)
Professor of Physical Education
- Richard J. Van Andel, M.S. (Michigan, 1982)
Assistant Professor of Engineering
- David A. Van Baak, M.A., Ph.D. (Harvard, 1975, 1979)
Professor of Physics
- Marten Vande Guchte, M.Ed. (Wayne State, 1965), Ph.D. (Michigan State, 1969)
Professor of Communication Arts and Sciences
- Peter Vande Guchte, M.B.A. (Michigan, 1960), Ed.D. (Western Michigan, 1973)
Vice President for College Advancement
- William J. Vande Kopple, M.A., Ph.D. (Chicago, 1973, 1980)
Professor of English
- Susan J. Vanden Berg, M.A.T. (Calvin, 1989)
Assistant Professor of Nursing
- James Vanden Bosch, M.A. (Ohio, 1972), M.A. (Chicago Divinity School, 1975)
Associate Professor of English
- Henry Vander Goot, M.Div. (Princeton Theological Seminary, 1971), Ph.D. (Toronto, 1976)
Professor of Religion and Theology
- †Evert M. Van Der Heide, M.A., Ph.D. (Wayne State, 1975, 1982)
Professor of Economics
- †Steven H. Vander Leest, B.S.E. (Calvin, 1988)
Instructor in Engineering
- Scott H. Vander Linde, M.A., Ph.D. (Notre Dame, 1984, 1989)
Assistant Professor of Economics
- Steven K. Vander Veen, M.B.A. (Western Michigan, 1985)
Assistant Professor of Business
- Marvin L. Vander Wal, M.S.E. (Michigan, 1972), P.E. (State of Michigan, 1975)
Associate Professor of Engineering
- Ray Vander Weele, M.B.A. (Northwestern, 1962), Ph.D. (Wisconsin, 1972)
Adjunct Professor of Business
- William Van Doorne, M.S., Ph.D. (Michigan, 1962, 1965)
Professor of Chemistry
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Professor of Biology
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Professor of Biology
Provost
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Professor of History

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Professor of Engineering
Chair of the Department of Engineering
- Howard J. Van Till, Ph.D. (Michigan State, 1965)
Professor of Physics
Chair of the Department of Physics
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Professor of Physics
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Director of Placement
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Professor of English
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Professor of English
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Professor of Classical Languages
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Professor of Education
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Professor of Sociology
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Professor of Music
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Professor of Philosophy
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Associate Professor of Art
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Assistant Professor of Social Work
- Paul J. Zwier, M.A. (Michigan, 1951), Ph.D. (Purdue, 1960)
Professor of Mathematics
- Uko Zylstra, M.S. (Michigan, 1968), Ph.D. (Vrije Universiteit, Amsterdam, 1972)
Professor of Biology



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Calvin College and Calvin Seminary

