

Calvin College

**The college of the Christian Reformed Church
The catalog for 1982-83**

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CALENDAR

The Fall Semester 1982

SEPTEMBER	7	Tuesday	Faculty Conference
	8	Wednesday	Residence halls open
	9-11	Thursday-Saturday	Orientation and registration
	13	Monday	First semester classes begin 8 a.m. Convocation 9:45-10:40 a.m.
OCTOBER	25	Monday	Reading Recess
NOVEMBER	12-23	Friday-Tuesday	Registration for Interim and spring semester
	23	Tuesday	Thursday class schedule in effect
	24	Wednesday	Friday class schedule in effect
	24	Wednesday	Thanksgiving recess 5 p.m.
	29	Monday	Classes resume 8 a.m.
DECEMBER	15	Wednesday	Classes end 10 p.m.
	16	Thursday	Examinations begin 9 a.m.
	21	Tuesday	Examinations end 9:30 p.m. Christmas vacation begins

The Interim 1983

JANUARY	5	Wednesday	Interim term begins 8:00 a.m.
	26	Wednesday	Interim term ends 5:00 p.m.

The Spring Semester 1983

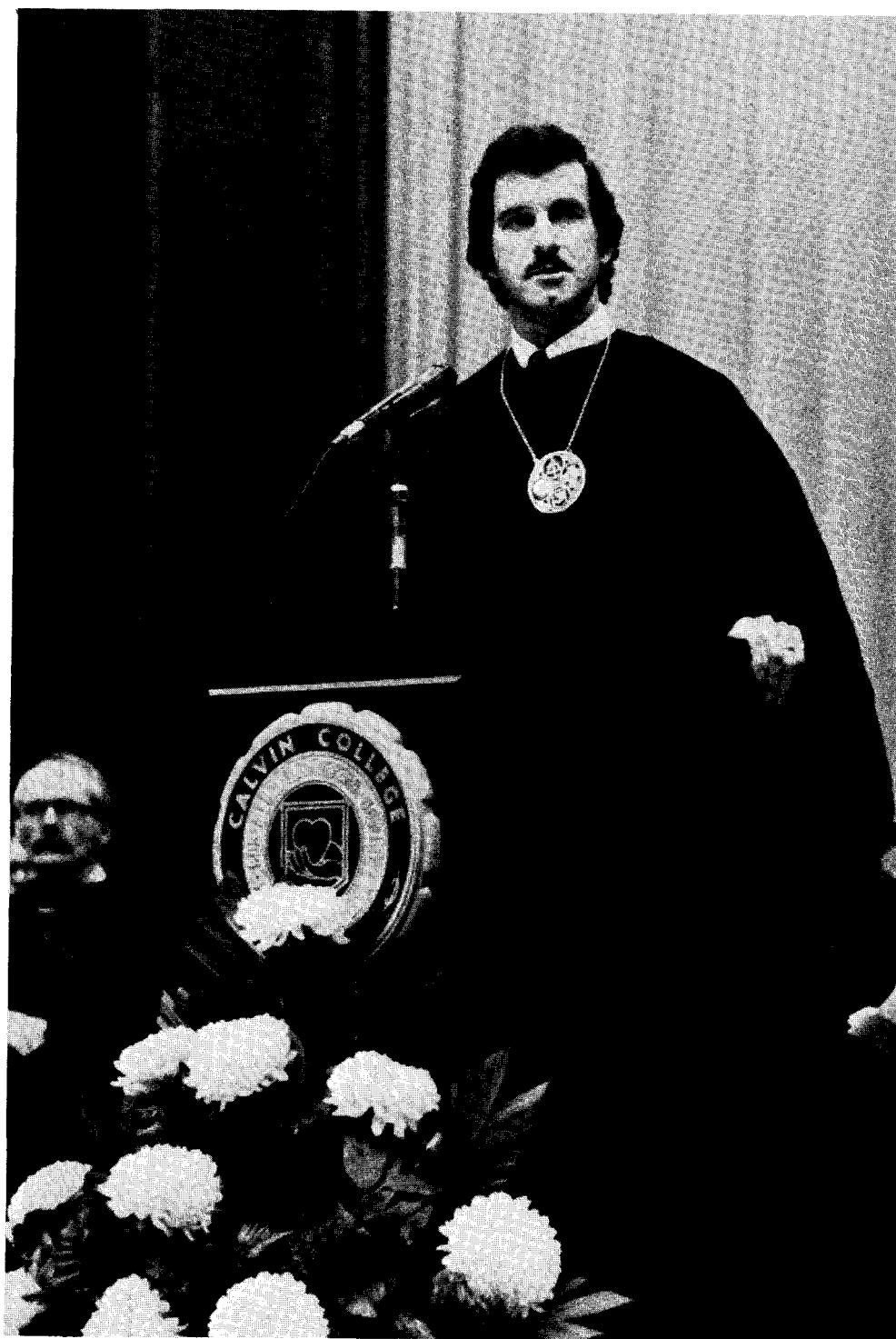
JANUARY	31	Monday	Spring semester classes begin 8 a.m.
APRIL	1	Friday	Spring vacation begins 10 p.m.
	12	Tuesday	Spring vacation ends 8 a.m.
MAY	11	Wednesday	Reading recess
	12	Thursday	Examinations begin 9 a.m.
	18	Wednesday	Examinations end 4:30 p.m.
	21	Saturday	Commencement 3 p.m.

The Summer Sessions 1983

	31	Tuesday	First session begins 8:30 a.m.
	22	Wednesday	First session ends
JULY	5	Monday	Second session begins 8:30 a.m.
	27	Wednesday	Second session ends
	28	Thursday	Third session begins 8:3 a.m.
AUGUST	18	Friday	Third session ends

The Fall Semester 1983

SEPTEMBER	8-10	Thursday-Saturday	Orientation and registration
	12	Monday	First semester classes begin 8 a.m.



HISTORY

The history of the college and its objectives

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

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

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

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

The founding date of Calvin College and Seminary is 1876. In that year the Christian Reformed Church adopted a six-year curriculum for ministerial training. The first four of these years were spent in the Literary Department and the last two in the Theological Department. In 1894 students who were not pre-theological students were admitted to an expanded curriculum, and thus the school became a type of preparatory school or academy. In 1900 the curriculum was further broadened and made more attractive to students interested in teaching or in preparing for preprofessional courses in the universities. By 1906 the Literary Department, which provided the four years of preparatory and two years of college work, became known officially as the John Calvin Junior College. The two-year college in time became a four-year college, and the preparatory department was discontinued. In 1921 Calvin College awarded its first Bachelor of Arts degree.

The school, which had started with seven students, grew slowly during the early years, but by 1930 it had reached its pre-World War II size of 350-450 students. By 1950 the enrollment had climbed to 1,270 and last year was approximately 4,000.

In 1956, when it became obvious that the college could expand no further on its Franklin Street campus, the trustees purchased the 165-acre Knollcrest Estate on the edge of the city. The new campus was planned as a unit before the first buildings, the seminary complex, were completed in 1960. Two years later the

college constructed four residence halls and a dining hall, thus beginning what was to be the decade of the divided campus. In the same year the first section of the library combined with Heritage Hall, and a classroom wing, Hiemenga Hall, were opened. Other buildings followed: the Physical Education Building in 1965, the Fine Arts Center and four more residence halls in 1966, a new student Commons in 1967, and a Science Building and two more residence halls in 1968. In 1970 the Library was expanded and two additional residence halls were opened. The William Spoelhof College Center, the Bergsma Natatorium, the Knollcrest East apartment complex, and the recent addition to the Commons have been added, thereby providing for the potential of 4,000 students with over half living on campus. The Johanna Timmer residence hall was opened in September, 1981 and the H. H. Meeter Center in 1982.

Library

The Calvin Library, at the center of the campus, serves students of both the college and the seminary. Its 340,000-volume collection of books and bound periodicals is distributed over three floors of open stacks, which are arranged according to the Library of Congress classification. More than 2,160 current periodicals are available for use in the library. Two major microfiche collections, The Library of American Civilization and The Library of English Literature, are part of the 20,000-item collection of microfilm, microfiche, and microcards. The library, which is air conditioned, can seat 1,100 persons, mainly in individual study carrels and at tables. There are also seminar rooms and a spacious lounge.

Several special collections are housed in the library. The H. H. Meeter Calvinism Research Collection, located on the third floor of the library, is one of the most extensive collections of books and articles on John Calvin and Calvinism available anywhere. The Colonial Origins Collection, which consists of manuscripts, archives, and other records of the Christian Reformed Church, its leaders, its Dutch origins, and closely related institutions is located on the first floor of the library. The Calvin Library is a partial depository of government documents, holding approximately 120,000 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 Computing Center is located in the William Spoelhof College Center. The center provides computing services to support instruction and research at the college as well as services to administrative offices of the college and the agencies of the Christian Reformed Church. The principal installations are two PRIME 750 computer systems and one PRIME 400 system.

One PRIME 750 system consists of a central processing unit with two million bytes of error-correcting memory and 600 million bytes of disk storage. The PRIME 400 system contains a million and a half bytes of error-correcting memory and 460 million bytes of disk storage. These systems also include two thousand line-per-minute printers, a thousand card-per-minute card reader, and two nine-track tape drives. They also have communications hardware that currently sup-

ports in excess of fifty-five remote terminals. These systems provide service for college administrative offices and are also connected by a communications link to the denominational headquarters of the Christian Reformed Church.

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

Instructional Resources Center

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

Aim and Purpose

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

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

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

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

Government

The corporate name of the college is CALVIN COLLEGE AND SEMINARY. It is governed by a single board of trustees which represents the ecclesiastical divisions of the church, arranged on geographical lines. The administration, the staff, the student body, and the physical facilities of the college and the seminary are largely separate and independent. The membership of the board is constituted of representatives elected by the various classes and approved by synod, and regional trustees elected by synod. The board of trustees meets in February and May of each year. An executive committee, which meets on the second Thursday of each month, functions for the board throughout the academic year.

Compliance with Legal Requirements

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

Accreditation and Affiliation

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

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. Normally, during each of the two semesters a student takes four courses, each of equal academic value, and during the interim he takes one. A reading recess during the first semester and the spring vacation during the second provide an opportunity for students to do research and to

complete major projects. As part of the 4-1-4 program an honors program has been established for the superior student as well as a special program of assistance for students admitted on probation.

The summer school consists of 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 Calvin Alumni Association is composed of all persons who have attended Calvin College for at least one year or who have completed eight courses. Persons who have attended Calvin Seminary for one year and those who teach at the college or seminary are also considered members of the association. There are currently nearly thirty thousand Calvin alumni around the world.

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

The Calvin Alumni Association is governed by a board of sixteen persons who serve for three years. The board meets five times during the year. Board meetings are open to all alumni and alumni chapters are urged to send representatives to the May meeting. The work of the Association is carried out by the Director of Alumni Relations.

The association sponsors an alumni magazine, services to alumni chapters, numerous programs, including Summerfest (the alumni vacation college), and contributes to faculty research projects. The alumni-financed program of freshmen grants and upper-division scholarships is of special interest to students. Information concerning all of these may be obtained from the Alumni Office.



STUDENT LIFE AND SERVICES

The student life on campus and its regulation

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

Worship and Christian Service

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

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

Student Conduct and Regulations

Admission to Calvin College is a privilege that may be withdrawn from any student who does not meet the academic standards of the college. In addition, the college not only expects a student to conduct himself both on and off campus in accord with the Christian goals and standards of the college but also may refuse admission to, may discipline, or may expel any student who in its judgment

displays conduct or attitudes unworthy of the standards of the college. The *Student Handbook* and *Residence Hall Living* booklets describe the regulations and their implementation.

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

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

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

Housing

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

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

The Fine Arts

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

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

Athletics

The core program of required physical education is organized to promote physical fitness, to introduce students to a variety of sports programs, and to create sufficient skill and interest so that they will continue to participate voluntarily. Accordingly, facilities for both indoor and outdoor recreation are conveniently and freely available. The intramural program is extensive throughout the entire year. Calvin participates in eighteen intercollegiate sports and is a member of the Michigan Intercollegiate Athletic Association (MIAA), which is composed of Albion, Alma, Adrian, Calvin, Hope, Kalamazoo, and Olivet colleges. It is also a member of the Association for Intercollegiate Athletics for Women (AIAW) and the National Collegiate Athletic Association (NCAA).

Student Senate and Other Organizations

The twenty-member Student Senate plays an important role in the life of the college. Not only does it serve as the official voice of the student body, but it also supervises most student activities. It oversees the budgets of student organizations and concerns itself with student publications, homecoming, the film arts, the campus radio station, and similar groups. Student members serve on most faculty committees.

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

Numerous clubs and organizations exist on campus, many of which are related to particular academic departments. All organized clubs and similar groups must have a faculty sponsor and must have formal approval through the dean of student life.

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

Health Services

The college provides limited medical service for all students. There is no fee for office calls but there are minimal charges for medication. The health center, located in the basement of Heyns Hall, is maintained by a full-time nurse and a team of college physicians who hold office hours each morning. This service is limited to out-patient treatment. All serious medical problems will be referred to the student's family physician, in the case of local students, or to a physician of the student's choice.

A Group Accident and Sickness Expense Protection Plan is available to all students on a low-cost, voluntary basis, and all students not covered by similar

plans are strongly urged to participate. Family plans for married students are also available. Information is available in the Business Office.

The Calvin College Blood Donor Club, sponsored by the SVS program and chartered by the Grand Valley Blood Program, conducts four blood drives each academic year in the college community. Through it any member of this community is entitled to receive blood free of charge.

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

Broene Counseling Center

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

Counseling, Advising, and Orientation

Shortly after registration freshmen are assigned to one of their instructors as their adviser. These faculty members will keep in regular contact with them during their freshman year and will review their grades and progress to assure a satisfactory transition from high school to college.

After their freshman year students are expected to relate themselves to some department or to some professor who will assist them in developing appropriate academic programs and in other matters. By the end of the sophomore year students must work out counseling forms defining programs which will lead to graduation. This usually requires declaring a major in a given department or group of departments. The chairmen or some other members of the departments at this time become the students' advisers. Such majors and advisers may be changed whenever a student changes his academic interests.

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

All new students are required to participate in a program of orientation held

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

Use of Motor Vehicles

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

Graduate Placement and Fellowships

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

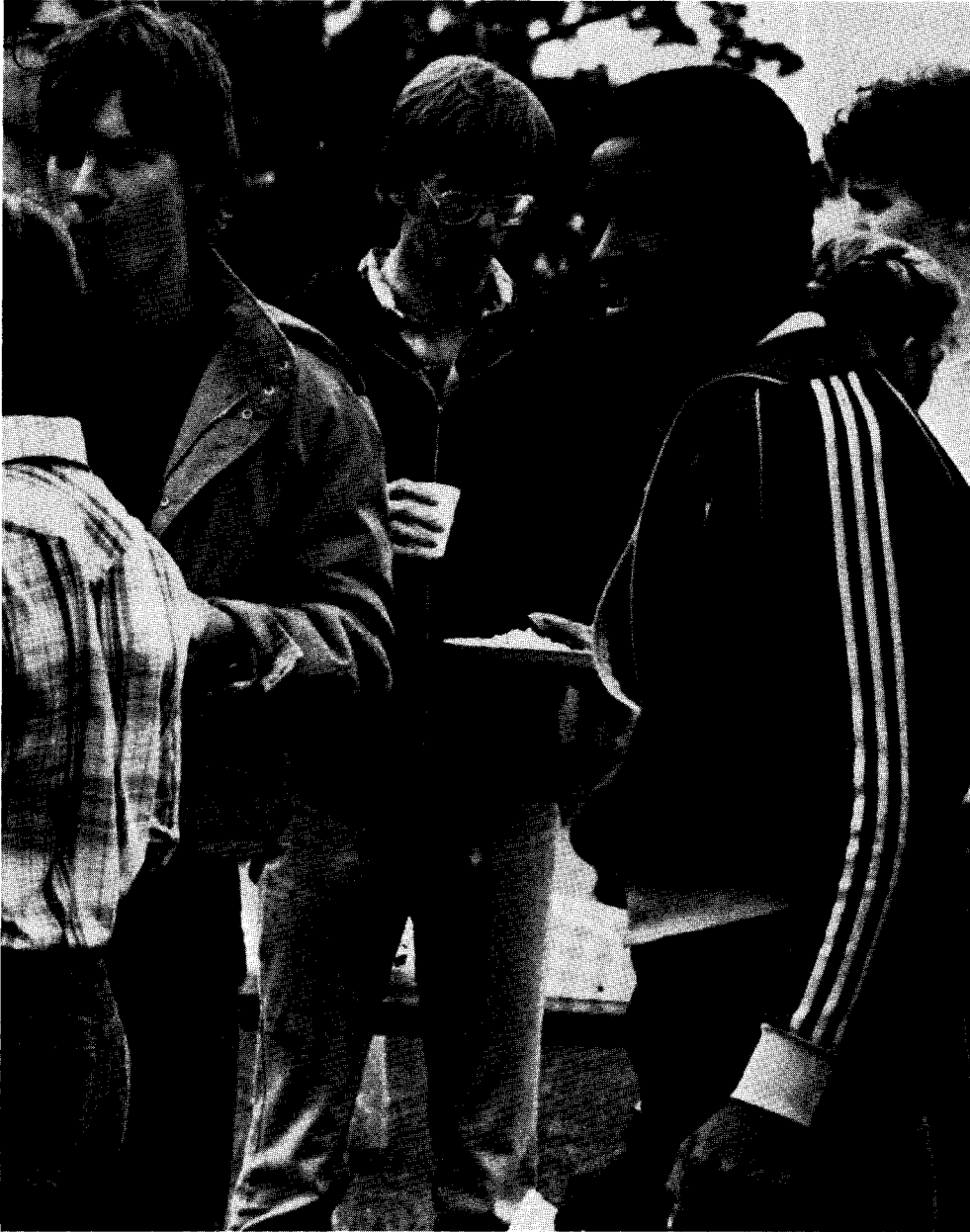
The Placement Office assists graduates and alumni in securing employment. All seniors and graduates are eligible for this service and are encouraged to establish a credential file in the Placement Office. There is a \$10 fee for the service.

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

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

Various graduate school and graduate fellowship programs are supervised by the dean for academic administration. The broadest of these is the Michigan Scholars program, which attempts to identify and encourage students of promise who are interested in graduate education. This program is administered cooperatively by five Michigan liberal arts colleges and the University of Michigan. Students who show outstanding promise are eligible for graduate fellowships. A number of competitive national fellowships are available to Calvin seniors, and

information on these is also available through the dean. These include the Rhodes scholarships, the Marshall fellowships, the National Science Foundation fellowships, the various Fulbright grants, and many others. The conditions for these grants vary from year to year as do the deadlines. For most of them, however, application must be made early in the fall and students are advised to take the Graduate Record Examination at the earliest possible date.



ADMISSION

Regulations concerning admission, grading, etc.

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

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

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

Candidates applying for scholarships should take their entrance examinations not later than December. All application forms received later than July 1 must be accompanied by a \$10 late registration fee.

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

Applicants with high school averages of C or higher in their college preparatory courses whose ACT-Composite is 16 or higher or whose SAT-Verbal is above 370 and SAT-Mathematics above 390 are normally given regular admission. Applicants with lower grades and scores and with deficiencies in their high school preparation are reviewed individually to find evidence of the ability to do satisfactory college work. Such applicants are admitted under special conditions. This program is described on page 72.

Candidates with strong backgrounds are often 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, subject to departmental approval. These tests are administered on May 16–20, 1983.*
2. *A satisfactory score on any of the Subject Examinations of the College-Level Examination Program (CLEP) of the College Entrance Examination Board. These tests are administered usually during the third week of each month.*
3. *The completion of college-level work while in high school,*
4. *The passing of special departmental examinations at Calvin College.*

Furthermore, students who have completed appropriate courses in high school are excused from certain college graduation requirements. This is most common in foreign language, mathematics, literature, and the sciences. Consult pages 39 and 43 for a description of the ways high school courses satisfy college requirements.

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

The American College Test is given, normally, five times a year throughout the world. Application forms are generally available from high school principals and counselors but may be requested from the American College Testing Program, Box 168, Iowa City, Iowa 52240. This test is required by the State of Michigan for its competitive scholarship program. Testing dates for the 1982–83 academic year are October 30, December 11, February 12, April 16, and June 11.

The Scholastic Aptitude Test will be given this academic year on October 16, November 6, December 4, January 22, March 19, May 7, and June 4. Application forms are generally available from high school principals and counselors but may be secured by students living east of the Rocky Mountains from the College Entrance Examination Board, Box 592, Princeton, New Jersey 08540. Those who live in the Rocky Mountain states or farther west, including those from Western Canada and foreign countries of the Pacific areas, should apply to the College Entrance Examination Board, Box 1025, Berkeley, California 94701.

Although low test scores are seldom used to bar admission to students who demonstrate a desire for a college education, average scores have remained steady in recent years. In 1979 the average high school grade was B (3.07); the average SAT-V was 472 and the SAT-M was 524; and the average ACT-E was 21.4 the average ACT-M was 22.8, and the composite, 22.9.

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

Transfer Students

Students transferring from other colleges or universities must follow the same procedures of applying for admission as freshmen, they should have a

cumulative grade point average of C (2.0) or higher, but are not required to sit for entrance examinations. They will receive credit for work done in accredited institutions provided the courses were of an academic nature and the students have received an honorable dismissal. However, not more than sixteen credit hours for each semester in attendance will be accepted. No more than seventy semester hours of advanced credit will be allowed for work completed at an accredited junior college. Furthermore, no matter how much work done at other institutions may be accepted, a student must complete his last year in residence and at least one upper-level course in his major to graduate from Calvin.

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

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

MODEL HIGH SCHOOL PROGRAM

High school students should recognize that the quality of their high school education will determine the ease with which they will do college work and their ability to follow certain courses of study. At Calvin the nature and quality of a student's high school preparation may reduce his college graduation requirements (See pages 39-43).

English	4 units	
Mathematics	3 units	Algebra and geometry are required. Four units are desirable for students in mathematics-related majors.
Foreign language	2 units	Preferably three; ideally the last unit in grade 12; prospective ministers should complete two or more units of Latin.
Science	2 units	Biology, chemistry, or physics; one with a laboratory. Chemistry and physics are recommended for prospective nurses.
History	2 units	
Typing		
Electives	3 units	
	16 units	Additional units are desirable for students with special interests.

Admission Under Special Conditions

The college is eager to serve students who show promise of benefiting from a college education even if they do not meet normal admission standards. Those who have not followed a college preparatory program, particularly one including algebra and geometry, are advised to make up their deficiencies during the summer before their freshman year. Students without the required mathematics courses are required to take non-credit courses during their freshman year. Approximately 10 percent of the freshman class is admitted conditionally.

Applicants who are at least nineteen years of age but have not completed high school or its equivalent may be admitted on probation provided they have

successfully completed the General Educational Development Test and submit satisfactory scores on one of the freshman entrance examinations.

Some applicants with weak high school records and/or low ACT or SAT test scores may be admitted on condition because of other evidence of academic promise. Such students will receive special counsel, may enroll for no more than three regular courses, are required to participate in the Academic Support Program, and are advised to restrict sharply their involvement in employment, in social life, and in campus activities.

Applicants who meet all of the requirements for admission but who do not desire to become candidates for an academic degree may be enrolled as special students for such studies as their preparation qualifies them.

Admission of Foreign Students

Calvin College welcomes foreign students who can demonstrate their potential ability to meet the academic standards of the college, who are prepared to do college-level work in English, whose application is supported by the results of the American College Test (ACT) or the Scholastic Aptitude Test (SAT), and who can show evidence of their ability to pay most of the cost of their education. The ACT and SAT are given in foreign countries but are not required of students presenting a Senior Matriculation Certificate or who transfer from another college or university where they have earned at least one semester of credit. Such students should be certain that Calvin College offers the programs they need. The college is authorized under Federal law to enroll nonimmigrant alien students.

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

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

Admission to the Diploma Nursing Program at Blodgett Medical Center

Students wishing to enroll in the diploma school of nursing at Blodgett Memorial Medical Center must apply for admission to both the college, as outlined above, and to the school of nursing, and must be accepted by both. Inquiries concerning the nursing program should be addressed: Director, Blodgett Memo-

rial Medical Center School of Nursing, 1840 Wealthy Street, Grand Rapids, Michigan, 49506 or by telephone, (616) 774-7898

Required high school courses are: English, three or four years; science, two years (biology, physics, and physiology recommended; chemistry with laboratory required); mathematics, one year of algebra; social science, two or three years.

Students interested in Bachelor of Science in Nursing programs should consult the section on Nursing on page 63.

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.

Those who wish to participate in courses not open to visitors without receiving credit must register as auditors. Admission to the college is required prior to registration. The audit fee is one half the credit fee per course, although full time students may audit courses without additional charge. 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.

Enrollment in Seminary Classes

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

Student Load and Classification

The typical student load is four to four and one quarter course units a semester. The normal course load, however, may range from three to four and three-quarter course units, permitting students to register for quarter courses in applied music, basic physical education, and drama in addition to a typical load. Non-credit remedial courses are counted as part of a normal load, and students on probation or condition may be required to limit their load to three credit course units. In exceptional cases a student may apply for permission from the registrar to carry more than four and three-quarter course units. Such an application requires the recommendation of the student's academic adviser or department chairman and the approval of the registrar. To be eligible for consideration the

student must have a cumulative grade point average of 3.0, must have received no grades of incomplete during the previous two semesters, and is expected to limit outside employment.

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

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

Grading Systems

Grades given during the regular semester are designated by letters A, excellent; B, good; C, average; D, just passing; F, failure; I, incomplete; W, authorized withdrawal; and N, unauthorized withdrawal. An honor student taking a fifth course may elect to have it graded as satisfactory or unsatisfactory.

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

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

A student who wishes to learn the content of a course without receiving academic credit may register as an auditor, unless that course is declared open to credit-seeking students only. Auditors are expected to attend the classes and participate in all the assigned activities of those classes. They may take all tests and submit any assigned papers but are not required to do so. However, if they fail to attend classes, the instructor will give them grades of W. Students may change their registration from audit to credit or from credit to audit only during the first four weeks of the semester.

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

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

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

Honors, Eligibility

Full-time students with an average grade of A- (3.50) or higher for any semester and a cumulative average of 3.3 or higher will be placed on the Dean's List. Part-time students and those on academic or disciplinary probation may not participate in any organized extra-curricular activity. For details of these regulations, see the *Student Handbook*.

Students desiring to graduate with an honor designation must participate in the honors programs. Consult page 43 for details.

Student Rights and Student Records

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

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

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

Official transcripts are released only when requested by the student. The first transcript is free, but each additional copy costs \$1.00. Transcripts will not be

released for students who have failed to meet their financial obligations to the college.

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

Academic Probation and Dismissal

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

Applicants whose test scores or past records indicate the likelihood that they will experience academic difficulty will be given conditional admission, limited to three and one-half course units, and required to participate in the Academic Support Program.

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

<i>Semesters of full-time enrollment¹</i>	<i>Minimum cumulative grade point average needed for continuation</i>	<i>Minimum cumulative grade point average needed for good standing</i>	<i>Minimum credit units completed needed for good standing</i>
1	1.0	1.50	2
2	1.0	1.65	5
3	1.3	1.75	8
4	1.45	1.85	12
5	1.60	1.90	15.5
6	1.75	1.95	20
7	1.85	2.00	23.5
8	1.90	2.00	28
9	1.95	2.00	31.5
10	2.00	2.00	36

Any student whose average falls below the minimum required for continuation is subject to dismissal. All students permitted to continue but not meeting the requirements for good standing are placed on probation. Freshmen placed on probation are limited to three and one-half course units and required to participate in the Academic Support Program. All students on probation are expected to

1. Interims are considered a part of the spring semesters for the purpose of determining academic status. Summers may be used to make up deficiencies. If a student discontinues prior to December 1 of the first semester, or prior to May 1 of the second semester, or at any time because of illness, that semester will not be counted.

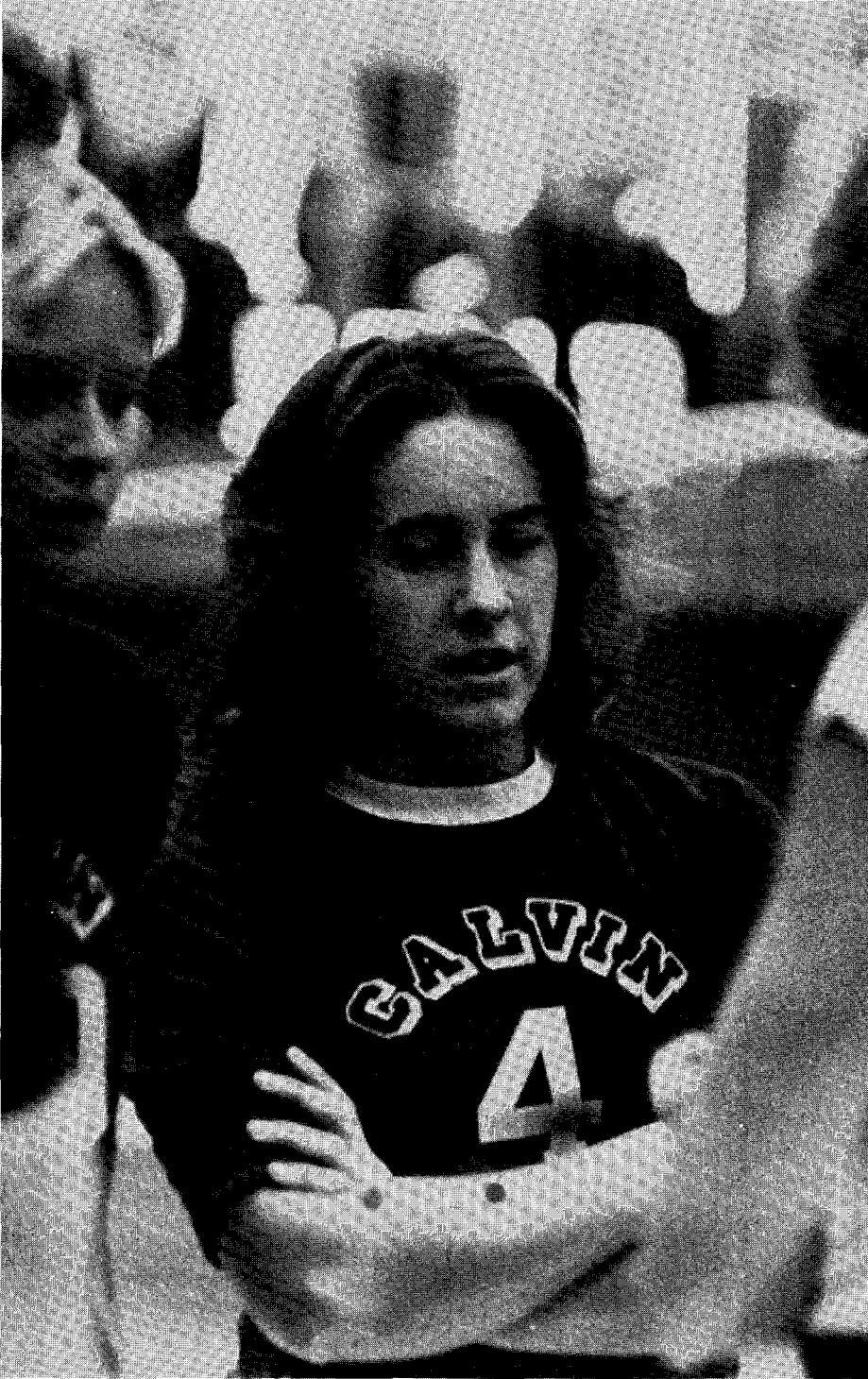
limit extracurricular activities and part-time employment and to seek help in developing their academic skills either from a faculty adviser or from the staff of the Academic Support Program.

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

Application For Degrees and Certificates

In addition to the formal requirements for degrees described in the section on "The Academic Programs" beginning on page 39, students must satisfy certain technical requirements. Normally, they must have completed their last year in residence at Calvin. They must also have completed a Major Concentration Counseling Sheet and have had it signed by their departmental adviser and have met all of the conditions specified in that sheet. (These sheets normally are completed during the sophomore or junior year.) Finally, they must have filed 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 have applied for admission to a departmental honors program and have met those requirements and must have met the general honors program requirements. Consult page 43 for details.



EXPENSES

Tuition and fees

TUITION FOR THE ACADEMIC YEAR is \$3,950; room and board on campus is \$1,850; and the estimated cost for textbooks and classroom supplies is \$200.

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

Most students at Calvin College receive some sort of financial support from grants-in-aid, scholarships, or other programs. Special grants-in-aid based on direct support through the churches are available to members of the Christian Reformed Church in North America.

BASIC CHARGES

Tuition, up to 4.75 course units a semester	\$1,975
Tuition, per course-unit rate	525
Tuition, auditing, per course unit	260
Tuition, clinical years, B.S. in Nursing	5,050
Room and board, academic year	1,850

SPECIAL FEES AND DEPOSITS

Visitor fee, per course	\$ 15
Art materials fee	20
Directed teaching fee (Educ 345,346)	10
Examination fee (course credit)	20
Examination fee (exemption)	5
Late application fee	10
Late installment payment fee	5
Individual music instruction	
One hour weekly lesson per sem.	250
Half hour weekly lesson per sem.	125
For concentrates, per sem.	185
Vehicle registration fee	10
Residence hall social fee	20
Housing deposit	50
Physical education locker deposit	5

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

Students are encouraged to pay their tuition, fees, room, and board in full at the time of registration each semester. Payment schedules are available at registration for those students who need to make payments over a period of time. These schedules call for a down payment at the beginning of each semester with payments of approximately one-third of the balance at the beginning of each subsequent month. The minimum down payment required at registration for resident students is \$1,300 for tuition, room, and board; the minimum for non-resident students paying tuition only is \$1,000. Denominational Grants and other financial aid are applied at the beginning of the semester and may be used to reduce the down payment. Accounts not paid on time are subject to a \$5 late

payment fee, and those not paid by the end of the semester will be charged an additional 1 percent per month on the unpaid balance. A penalty fee of \$10 is charged students who have not paid their bills in full, unless arrangements are made with the Business Office by December 10 in the first semester and April 30 in the second. Transcripts are not issued for students owing money.

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

Grants, scholarships, and awards

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

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

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

Specific information about financial aid programs is given in the following pages. 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.

TUITION REDUCTION PROGRAMS

Michigan Differential Grants. The State of Michigan funds a grant program of aid to Michigan students at private colleges in the state which offsets part of the difference in tuition between public and private colleges. To be eligible for the grant, a student must be a Michigan resident, an undergraduate, enrolled at least half-time, and must meet the academic progress standards of the college. For

1982-83, grants are expected to be \$500 per year for full time students, and \$250 per year for half-time students.

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

The Denominational Grants for 1982-83 are:

	Grant per semester, if paying full tuition	Grant per course, if paying by course
For Michigan students		
Within 10 miles of the campus	\$165	\$40
From 10 to 150 miles	215	40
Beyond 150 miles	275	40
For out-of-state students		
Within 300 miles	365	60
From 300-1,000 miles	415	70
More than 1,000 miles	465	80
Manitoba, Ontario, Quebec	415	70
Alberta, British Columbia, Nova Scotia, Prince Edward Island, Saskatchewan	465	80

ACADEMIC SCHOLARSHIPS

A variety of types of scholarships are available for students of all classes. These are granted on the basis of academic achievement, program of study, other designated conditions, and, in some cases, financial need. More than two hundred fifty scholarships are awarded annually to prospective freshmen and approximately three hundred to upperclassmen.

At the time of admission all students are considered for scholarships. Scholarship review begins in December and students who are selected to receive a scholarship are notified soon afterwards. Those students who wish to be considered for the Freshman Honors Scholarship or similar scholarships should be admitted by February 1 and should arrange to have their ACT or SAT scores available by that time.

The general freshman and upperclassman scholarships of \$300 a year are renewable for up to four years, or until the student receives his degree, if the

student maintains a 3.5 average or higher. Transfer students and others achieving this average are considered automatically each year. For 1983-84 these scholarships will be increased to \$350. Other special scholarships are awarded on an annual basis and require an annual application, unless the condition of the scholarship specifies otherwise. Students should determine their own eligibility for these scholarships. Students eligible for more than one scholarship are granted the larger one.

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 1 (March 1 for Canadians) and upperclassman applications should be filed by March 15. Later applications will be considered if funds are available.

ACADEMIC PROGRESS REQUIREMENTS FOR FINANCIAL AID

Financial aid recipients must meet minimum academic progress requirements in order to continue to receive aid in the Michigan Tuition Grant and Differential Grant, Calvin's Scholarships and Grants, Pell Grant, Supplemental Educational Opportunity Grant, National Direct, and Guaranteed Student Loans, and the College Work-Study Employment Program.

Minimum academic progress for these programs is defined in terms of the number of credits earned in relation to the number of semesters on aid except for part-time students who are evaluated individually. Specifically, the requirements for full-time students are as follows:

<i>Semesters on aid</i>	1	2	3	4	5	6	7	8	9	10
<i>Course units required, including interims</i>	2	5	8	12	15½	20	23½	28	31½	36

The progress of students receiving aid is reviewed at the end of each semester. The continuation of financial aid, however, is determined only after the spring semester. The students who have not earned the number of credits required are not eligible to continue to receive aid in the programs listed until they have earned enough credits without receiving aid to meet the criteria once again. Students who are denied aid because of insufficient credits should contact the Financial Aid Office if there are extenuating circumstances which should be taken into consideration.

SCHOLARSHIP AND GRANT DIRECTORY

Freshman Scholarships and Awards

Freshman Honors Scholarships. Each year the college awards twenty-five to thirty Honors Scholarships to students of superior academic achievement and potential. The minimum stipend of this scholarship is \$800 for direct educational expenses plus \$50 for books other than textbooks. For 1983-84, the amount will be increased to \$950 plus \$50 for books.

Valedictorian Freshman Scholarships. Scholarships of \$650 each are awarded to incoming freshmen who rank first in their high school class. For 1983-84, the amount will be increased to \$700.

Freshman Scholarships for National Merit Semi-finalists. Calvin College awards a scholarship of \$600 to each prospective freshman who has been selected as a Semi-Finalist in the National Merit Scholarship Program. These scholarships will be increased to \$700 for 1983-84.

Freshman Scholarships. Scholarships of \$300 (\$350 for 1983-84) are awarded to entering freshman who have done excellent work in high school and have not been selected to receive one of the other freshman scholarships. These scholarships are awarded on the basis of grade point average and ACT or SAT scores. Ordinarily, a grade point average of 3.5 or higher is required.

Calvin College National Merit Scholarship. Calvin College annually sponsors three four-year scholarships for National Merit Finalists. The minimum amount of the scholarship is \$750. Additional amounts are available based on need. Prospective students who indicate to National Merit that Calvin College is their first choice institution will be considered for this award.

Leonard M. Krull Scholarship Aid Fund. As a result of a bequest to Calvin College by the late Leonard M. Krull of Westborough, Massachusetts, three or more scholarships are available each year to prospective freshmen from the Whitinsville, MA area. The scholarships range from \$300 to \$600 with selection based on the student's academic record, ACT or SAT scores, and, in the case of the \$600 scholarship, on financial need. Scholarships based on need are renewable for up to four years. Selection is made by the Scholarships and Aids Committee of the col-

lege in consultation with a representative committee from the Whitinsville area.

Steelcase Foundation Scholarships. The Steelcase Foundation of Grand Rapids, Michigan, offers scholarships totalling \$2,000 annually to applicants who are children of Steelcase employees. The recipients are selected by the Scholarship Committee. Applicants are judged on the basis of scholastic ability, character, and need. If scholarships are not filled by children of Steelcase employees, for whatever reason, the scholarships are available to other Michigan residents. To be considered, eligible freshmen must write a letter of application to the Office of Scholarship and Financial Aid.

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

Oratorio Society Applied Music Awards. A number of awards of \$250 each are presented by the Calvin College Oratorio Society to prospective freshman for use toward the cost of individual lessons in applied music. These awards are given to instrumentalists and vocalists who have records of superior achievement in high school music activities, who give evidence of outstanding talent and musicianship in audition, and who will participate in the scheduled rehearsals and performances of at least one of the following: band, capella, campus choir, oratorio chorus, orchestra. The deadline for applying for the Oratorio Society and Vander Heide awards is April 1. Application blanks and additional information are available from the Music Department. Awards are announced by the end of April.

Vander Heide Voice Award. An award of \$250 is offered annually by Mr. and Mrs. Jan Vander Heide to a vocalist who has a record of superior achievement in high school music activities. The award is applied to four semesters of private voice lessons. The recipient will be expected to participate in the scheduled rehearsals and performances of at least one faculty-directed choral ensemble. Only incoming freshmen are eligible. Applicants will be judged on the basis of evidence of talent and musicianship. See Oratorio Award above for application procedure.

*Freshman Scholarships and Grants
Not Administered by the College*

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

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

Henry Beets Mission Society Scholarship. The Henry Beets Mission Society of the La Grave Avenue Christian Reformed Church provides an annual grant to promote the ministry of the Church to the American Indian. Initial funds for this grant were given by the Herrick Foundation of Detroit, Michigan. Those eligible are American Indians who intend, preferably, to minister as pastors or teachers to members of their own race. The amount of the grant is determined by the need of the student. The student should consult with the registrar when planning his program. Candidates should apply in writing to the Henry Beets Mission Society, La Grave Avenue Christian Reformed Church, 107 La Grave Avenue, Grand Rapids, Michigan 49503.

*Sophomore, Junior, and Senior
Scholarships and Awards*

Upperclassman Scholarships. Scholarships of \$300 are awarded to upperclassmen each year who have a cumulative grade point average of 3.5 or higher at the end of the first semester of the previous year and who have not been selected to receive one of the other scholarships awarded by the college. Transfer students are considered for this scholarship on the basis of their grade point average at their previous college. The amount will be increased to \$350 in 1983-84.

Alumni-Faculty Memorial Scholarships. The Calvin Alumni Association each year provides the college, in memory of deceased college faculty members, with annual scholarship grants. Candidates for these scholarships are selected by the Scholarship Committee and are interviewed by the Alumni Board. There are usually nine scholarships of \$800 each awarded annually.

Bere Memorial Scholarship. The college has received a gift from Mrs. Jeanne L. Bere in memory of her late husband, Paul Bere, the income from which is used to award one scholarship of \$400 or more each year. The scholarship is awarded to a pre-law student entering the junior or senior year, with primary emphasis on an evaluation of academic performance and potential. Financial need is a secondary factor in the selection.

Dr. John W. Brink Memorial Scholarship. One scholarship of \$300 is awarded each year in memory of Dr. John W. Brink to a premedical student for use in the junior or senior year at Calvin College. Selection shall be on the basis of character, academic performance, and potential without regard to need.

The Margaret and Douglas Bush Family Scholarship. The Bush family has provided the college with funds to encourage worthy students to prepare for positions in business and business education. One or more awards are made each year by the Scholarship Committee of the college on the basis of diligence, character, commitment to service of the Lord and mankind, promise of growth, and, in some cases, financial need. Although the student's academic record is not a primary factor, a grade point average of 3.0 or better is required.

Dr. Harry Kok Memorial Scholarship. A scholarship of \$400 is presented each year, in memory of Dr. Harry Kok, to a junior student 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.

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 \$400 or more each are based on Christian character, personality, possible financial need, and promise of growth. Selection is made by the Scholarship Committee.

Paul and Mrs. Doris Dirkse Health Care Scholarship. Dr. and Mrs. Dirkse have provided the college with a fund, the income from which is used to award scholarships of \$400 or more to students pursuing pre-professional courses in medicine, dentistry, nursing, physical therapy, and related professions and para-professions. Pre-nursing students will be considered as freshmen and sophomores. Other students will be considered at the sophomore, junior, and senior class levels. Selection criteria include vocational interest, academic record, character, and need.

Dow-Employees Scholarship Fund. The Dow-Employees Scholarship Fund provides Calvin College with one or more scholarships of \$500 each. The stipend is to be given preferably to an outstanding science or engineering major in the junior year, or to a major in another department, if the college so elects, for use in the senior year. The recipient must have the ability, initiative, and personality to contribute to the student's field in coming years.

Farmers Insurance Group Scholarship. Each year the Farmers Insurance Group of Los Angeles, California, provides the college with a gift of \$700. This is to be used to award one or two scholarships to second, third, or fourth year students in mathematics or business administration. Financial need is a primary factor in selecting a recipient; however, an academic record of C+ or better is also required.

Dr. Roger A. and Bradley J. Hoekstra Memorial Scholarship. A gift designated to provide student scholarships has been received from Mrs. Janice Hoekstra in memory of her late husband Roger and son Bradley. Scholarships of \$500 or more will be awarded to upperclassmen who are pursuing a program in the health professions including at least two of which will be awarded to 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.

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

Steelcase Foundation Scholarships. The Steelcase Foundation of Grand Rapids, Michigan, offers totalling \$2,000 to applicants who are children of Steelcase employees. The recipients are selected by the Scholarship Committee of the college, and the applicants are judged on the basis of scholastic ability, character, and need. If scholarships are not filled by children of Steelcase employees, for whatever reason, the scholarships are available to other Michigan residents.

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

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

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 of \$500 or more each

year. One of the scholarships is awarded to a prospective junior or senior who is pursuing a program in the health professions, with preference given to those interested in missions or some other type of Christian service. The other scholarships are awarded to a top student in any area. Selection criteria include the student's academic record, character, and need.

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

The Cayvan Award in Strings. An annual award of \$200 is offered to an outstanding sophomore or junior player of violin, viola, cello, or bass viol for use toward the cost of individual lessons in applied music during the junior or senior year. Selection shall be made on the basis of proficiency in performance on the instrument, evidence of sound musicianship, grade point average, especially in music, and participation in the college orchestra and in a chamber music ensemble.

Alumni Players Upperclassman Music Award. The Alumni Players of Calvin College have provided the Department of Music with funds to make one or more annual awards of \$200 each to an outstanding sophomore or junior music major for use toward the cost of individual lessons in applied music in the junior or senior year. Applicants shall be judged by the following criteria: proficiency in performance, overall contribution to the musical life of the college, grade point average, particularly in music, and active participation in college ensembles.

Helene Hekman Gezon Voice Award. Contributions have been received by the college in memory of Mrs. Gezon which will provide the Department of Music with funds to make an annual award of \$300 to an outstanding sophomore or junior voice student for use toward the cost of individual lessons in applied music in the junior or senior year. Applicants shall be judged on the basis of proficiency in performance as a singer, evidence of sound overall musicianship, and grade point average, especially in music.

John Scripps Wind Scholarship. An annual award of \$200 is given by John Scripps to an outstanding upperclassman performer on a wind instrument. Applicants will be judged by the following criteria: superior performance on a wind instrument as evidenced in recital and ensemble performances, participation in and contribution to instrumental ensembles at Calvin, initiative and leadership in wind chamber ensembles, and grade point average, especially in music.

Music Department Upperclassman Keyboard Award. An annual award of \$200 is offered to an outstanding sophomore or junior pianist or organist to be used toward the cost of individual lessons in applied music during the junior or senior year. Applicants will be judged on the basis of proficiency in performance at the keyboard, evidence of sound overall musicianship, and grade point average, especially in music.

Scholarships for Graduate Students

Graduate students enrolled full time in the Master of Arts in Teaching or the Master of Arts in Christian Studies Programs are eligible for scholarships similar to those funded by the college for freshmen and upperclassmen. For 1982-83, scholarship amounts range from \$300 to \$800. In 1983-84, scholarships of \$350, \$700, and \$950 will be available. Generally, a cumulative grade point average of 3.5 or higher is required for consideration.

Need-Based Financial Aid

Michigan Competitive Scholarships and Tuition Grants. The State of Michigan provides awards of up to \$1,300 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.

Michigan Differential Grants. The State of Michigan funds a grant program of aid to Michigan students at private colleges in the

state which offsets part of the difference in tuition between public and private colleges. To be eligible for the grant, a student must be a Michigan resident, an undergraduate, enrolled at least half-time, and meeting the academic progress standards of the college. For 1982-83, grants are expected to be \$500 per year for full time students and \$250 per year for half-time students.

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 \$1,800 per year to students whose parents' income is approximately \$25,000 or less. Since there are factors other than income considered in the evaluation, some with incomes above \$25,000 may qualify for the program, and others with lower incomes may not qualify. Only students in undergraduate programs are eligible.

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

Freshman Alumni Grants. Since 1966, the Calvin Alumni Association has provided funds for grants to prospective freshmen. For 1982-83, grants were given to 154 students in amounts ranging from \$100 to \$500. Selection is based on the student's academic record, ACT or SAT scores, and financial need.

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 1982-83 is \$2,600.

SCORR Grants. The Christian Reformed Church has authorized the Synodical Committee on Race Relations (SCORR) to provide need-based grants up to \$1,000 per year to North American students of minority cultures who are within the fellowship of the Christian Reformed Church. The purpose of the program is to encourage the development of multi-racial leadership in the Christian Reformed Church.

Interim Grants. The college provides need-based grants to students enrolled in off-campus interim courses when there is an additional cost involved. These funds are made available so that students who need an off-campus course for their academic program are not denied this opportunity because of a lack of financial resources. Criteria used in awarding the grants include an evaluation of the importance of the interim course to the student's academic program and the student's need as determined from a financial statement. The amount of the grant depends on the cost of the interim course and on the student's need. The maximum grant is approximately \$600.

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

National Direct Student Loan Program. This program, sponsored by the federal government for U.S. citizens and permanent residents, provides long term loans to students with financial need. There is no interest charge on the loan, and repayment can be deferred as long as the borrower is enrolled in college at least half-time. Repayment begins six months after the borrower ceases to be at least a half-time student, and the interest rate during repayment is 5 percent simple interest. The minimum repayment is \$90 every three months with a 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.

Guaranteed Student Loan Program. Loans from private banks, guaranteed and subsidized by the federal government through various state and private agencies, are available from many banks and other lending institutions in amounts up to \$2,500 per year. Repayment of the loan is deferred as long as the student is enrolled at least half-time and until six months after leaving school, during which time there is no interest charge. The repayment period can be as long as ten years, if needed, although a minimum payment of \$50 per month is usually required. Applications for these loans are available from local lending institutions.

Canada Student Loans. The Canadian government sponsors an interest-free loan program for Canadian citizens similar to the Guaranteed Student Loan Program described above, with a maximum loan of \$2,025 per year. Application forms are available from provincial Offices of Education.

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.

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

Broodman Oratorical Awards. Through the generosity of the Broodman family of Grand Rapids, Michigan, a gold medal and a \$25 Savings Bond are awarded to the first place winner in a men's oratorical contest. Silver

and bronze medals are given annually to the winners of the second and third places, respectively, in a men's oratorical contest. These awards are presented in memory of the late Dr. G. J. Broodman. The first-place winner represents Calvin College in the State Oratorical Contest of the Michigan Intercollegiate Speech League.

Ervina Boeue' Scholarship for Theater Arts. Through the generosity of former students and friends this scholarship honors Mrs. Ervina Boeue' 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 Speech Department to a junior speech major with a theater arts concentration on the basis of academic record and proven ability and dedication in performance, production, or scholarly research in theater. Applicants for the scholarship must submit an application portfolio to the Speech Department by April 1.

The Dr. Roger A. and Bradley Hoekstra "Toward Christian Excellence in Medicine" Award. Roger A. Hoekstra, M.D., an alumnus of Calvin College, and his son, Bradley J., an outstanding sophomore pre-medical 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 pre-medical student. The award consists of a cash gift and a commemorative plaque. The candidate for the award is selected from nominations made by the faculty and must be a graduating senior who has completed more than two years at Calvin College and has been accepted by an accredited medical school. The award is based on academic excellence, Christian character, and potential for excellence and Christian service in medicine.

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

English Department selects the person to receive the award.

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

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

Thespian Oratorical Awards. The Thespians, dramatics club of Calvin College, offers three awards in oratory for women, of \$15, \$10, and \$5. The first award winner represents Calvin College in the State Oratorical Contest of the Michigan Intercollegiate Speech League.

The Beets Calvinism Award. The late Dr. and Mrs. Henry Beets established a fund, which now amounts to approximately \$1,500, the income from which is used to award a prize or prizes for the best research paper or papers on annually specified themes in Calvinism studies, written by Calvin College students. The prize or prizes are awarded at the discretion of the Department of Religion and Theology.

The William B. Eerdmans Literary Awards. The late Mr. William B. Eerdmans, Sr., established the William B. Eerdmans Literary Awards in the interest of encouraging original, critical, and creative writing among Calvin College students. The \$50 award is administered annually by the English Department.

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

The Rinck Memorial Award. A fund of \$4,000 has been subscribed 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 the Mathematics Department who has, in the opinion of the members of the department, done superior work in undergraduate mathematics.

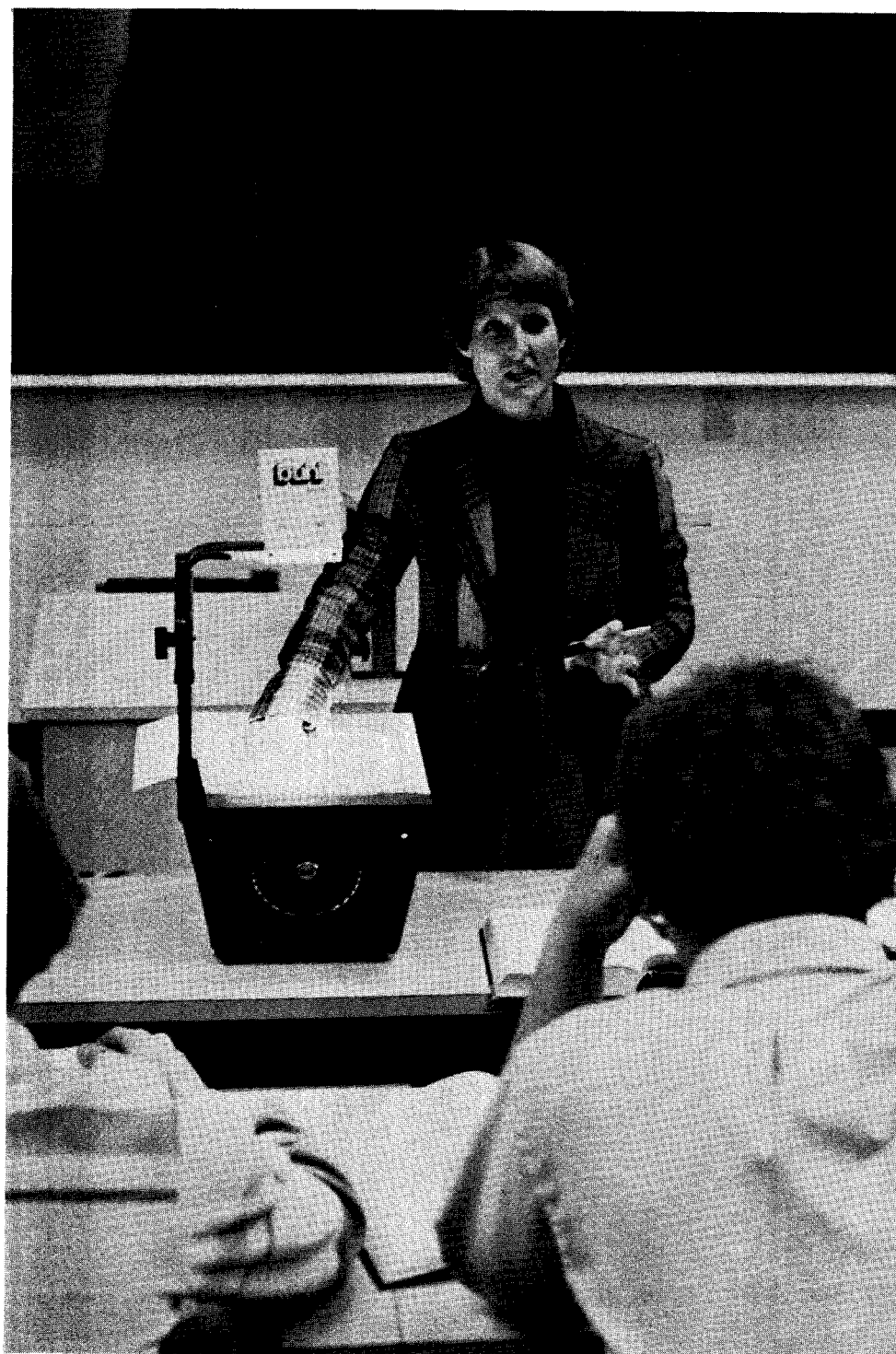
Jewish Evangelization Award. Dr. and Mrs. William J. Yonker offer a prize of \$100 for the best essay and a prize of \$75 for the second-best essay on a subject bearing on the evangelization of the Jews. The contest is open to all college students and is administered by the Department of Religion and Theology.

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 of \$800 to a member of the graduating class of Calvin College. (To be increased to \$950 for 1983-84.) The award will be made to a student who plans to enter Calvin Seminary and, eventually, the ministry of the Christian Reformed Church. Applications should be in the hands of the Scholarship Committee of the college by March 1.

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

University of Michigan Scholarships for Graduates of the Three-Year Engineering Course. The University of Michigan offers several scholarships to students who have completed their three-year engineering course at Calvin College and who transfer to the University of Michigan to complete their work for an engineering degree. Interested students should consult with the chairman of the Engineering Department before March 1, which makes its recommendation on the following criteria: a minimum grade point average of 3.0, completion of a minimum of twenty-eight courses at Calvin College, demonstration of serious interest in the activities of the department, and intention to apply for a Calvin Bachelor of Science degree upon completion of the engineering degree requirements.



ACADEMIC PROGRAMS

Christian liberal arts education

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

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

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

The Christian liberal arts philosophy permeates all of the degree programs of the college. Traditionally, most students complete the Bachelor of Arts or the Bachelor of Science degree programs, either of which may include a teacher certification component. A Bachelor of Fine Arts degree with a professional art emphasis was introduced in 1974, a Master of Arts in Teaching degree in 1976, and a Master of Arts in Christian Studies in 1980. Calvin College also offers a variety of cooperative bachelor of science degrees in conjunction with other institutions, in engineering, forestry, medical technology, natural resources, nursing, and special education (see pages 46-64) as well as a Bachelor of Science in Education degree in a combined curriculum plan with the Grand Rapids Baptist College.

Bachelor of Arts, Bachelor of Science Degrees

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

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

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

I. THE LIBERAL ARTS CORE

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

Six of the liberal arts courses provide the context for a Calvin education (history, philosophy, religion); eight provide an introduction to the major systematic disciplines (the sciences, the social sciences, the fine arts); two and a half assure a skill in the basic competencies (written and spoken rhetoric and physical education); and two, when preceded by language foundation in high school, provide minimal command of a foreign language. These core courses are described in the various departmental sections. The specific requirements are as follows:

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

One course in history from 101 and 102.

One course in philosophy from 151 and 153.

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

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

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

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

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

One course in physical science from Chemistry 110, Physics 110, 112, which is required in elementary education programs, 124, Astronomy 110, 201, and Geology 103.

One course in biology from 111, 215, which is recommended for elementary education programs, 216, 217, or 131, which is required in pre dental and premedical programs, and

216. A student may also meet this requirement by completing 107 or both 105 and 106.

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

Students who have completed with a minimum grade of C a course in Senior Mathematics in high school are excused from the mathematics requirement, those who have completed a year of standard high school physics (not physical science) in the eleventh or twelfth grade are excused from the physics requirement, and those who have completed certain high school biology courses with a minimum grade of C are excused from the requirement in biology. Students in elementary education programs who are excused from physics or who take a course other than Physics 112 must take 113.

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, Political Science 151, 201, 202, 203, and 210; 201 or 210 is recommended for elementary teacher education programs.

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

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

One course in literature taught in English from courses numbered 200 through 321. English 260, 325, and 326 do not meet this requirement.

One course in the other fine arts or in literature taught in a foreign language. These may be from Art 151, 231, 232, 332, 335, 338, 340, Classics 221, 231, Music 103, 133, 231, 232, 233, 234, 236, 238, 241, Speech 203, 217, 304, 317, 318, 325, 326, or foreign literature courses. Art 215 and Music 238 are acceptable only in elementary teacher education programs.

A third course is required of those students who did not take a year's course in literature, art history, or music appreciation during their junior or senior years in high school. English 325 may be taken as this third course.

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

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

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

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

6. Competency is required in one foreign language

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

Students are advised to continue in languages they have studied previously and will be placed in classes at their level of ability as determined by placement examinations. Special three-course sequences (121-122-123), involving two semesters and an interim, are available in French, German, and Spanish for students whose preparation is weak or who are in teacher education programs without having studied a foreign language previously. Lan-

languages other than those taught at Calvin may be accepted. Students for whom English is a second language may be exempt from this requirement but are required to take English core courses each semester until they have met their core requirements.

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

II. INTERIM COURSES

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

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

III. PROGRAMS OF CONCENTRATION (MAJORS AND MINORS)

Majors. As stated above, every degree-seeking student must fulfill the requirements of a faculty-approved departmental or group major. Although such major concentrations are not normally chosen until the second semester of the sophomore year, most programs do presuppose the completion of specific freshman and sophomore courses. Official admission to a major program requires the formal approval of a department or program adviser and the completion of a counseling form which details the student's remaining academic requirements. If at any time a student changes his major, he must again submit a new 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 a C (2.0) in each course designated as a prerequisite for admission, unless that department stipulates a C (2.0) average in two or more prerequisite courses. To be admitted to a group concentration a student must have met the grade point average required for admission by the primary department within that group. A student not maintaining a minimum grade of C (2.0) in the program of concentration may be permitted to remain in that program for a single semester of probation.

The various programs of concentration are specified in the section of the catalog which describes departmental programs and course offerings, beginning

on page 67. Group majors designed for teacher certification programs are described in the section on Teacher Education Programs, on pages 48 and following. Students may also initiate interdisciplinary programs of concentration other than those formally approved by the faculty. Requirements for developing such interdisciplinary programs are available from the registrar's office. Such programs require the approval of the departmental chairmen concerned as well as of the registrar.

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

Special academic programs

Exemption and Course Credit by Examination

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

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

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

The Honors Programs

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

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

Students in the General Honors Program may register for a variety of types of honors courses—honors sections in large courses, special honors courses, or honors registration in regular courses for which intensified work will be required.

No student may carry more than two such courses at a time. Students in the program may avail themselves of the right to be exempt from core course requirements by examination and of the right to propose cross-disciplinary programs of concentration.

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

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

The Academic Support Program

The Academic Support Program provides training and support to students who are judged to need them because of past academic performance or because of current difficulties in their academic programs. It offers opportunity for development of college-level study and reasoning skills in a classroom setting, through personal academic counseling and from trained tutors.

Special intensive classes are offered in English rhetoric and English as second language for students who need systematic review of language skills, and pre-college mathematics review courses are available to liberal arts students as well as science students who have limited preparation in mathematics. Course descriptions can be found on pp. 72.

Participation in the program is required of freshmen with conditional admission or probational standing, but its services are available to any student who wishes to do better in any class. Services available upon request include analysis of study efficiency, diagnostic testing, and circulation of materials for independent work in reading, reasoning, spelling, specialized vocabulary, and mathematics.

The director of the program is Mrs. Evelyn Diephouse.

Self-instruction in Languages Not Otherwise Taught at Calvin

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

The program requires ten to fourteen hours a week of independent study, using tape-recorded materials coordinated with a course text, and an additional

minimum of three hours of private or small group tutorial drill sessions with a native speaker of the language. The student must commit himself to the schedule established by the program director and must complete the course within a specified period. Progress of the student is monitored by both the native speaker and the program director, with the final evaluation based on written and oral tests administered by an outside examiner.

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

Study-Abroad Programs

In cooperation with Central College, Calvin College offers semester and year study programs in France, Germany and Austria, and Spain which permit students to register for courses in a variety of subjects. Such courses may be applied toward graduation requirements at Calvin. To be eligible for such programs a student must have completed the study of the appropriate language through the second-year level. Month-long intensive review courses in the languages are available in the countries involved before the beginning of the fall semester. English language programs are available in Wales and England.

In addition to such study programs, language-only programs are available in France and Spain. Through them students may satisfy Calvin's foreign language requirement.

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

Information on other overseas programs is available in the office of Dean Miller.

Chicago Metropolitan Study Center

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

Washington Semester Program

Calvin College is a participant in the American University's Washington Semester Program, which enables selected students to spend a semester in Washington, D.C., at the American University, studying and observing political institutions and processes. Seminars, small group discussions with political lead-

ers, a major independent research project, and observation of governmental institutions form the major portion of the program.

Typically students participate in the program during their junior year. To be eligible a student must have completed at least one course in American politics and earned a 3.0 grade point average or higher. Mr. Johan Westra of the Department of Political Science is the faculty adviser.

Other degree programs: B.F.A., M.A.T., M.A. in C.S.

Bachelor of Fine Arts Degree

A student wishing to obtain a Bachelor of Fine Arts degree (B.F.A.) in art must successfully complete thirty-six courses, including three interim courses, the liberal arts core courses designated below, and a prescribed program of concentration. Before applying for admission to the program a student must have completed three studio art courses. Additional requirements for admission and of the program are available from the chairman of the Department of Art.

The required eighteen-course program consists of three basic art courses (205, 209, 210), four from introductory courses to the various media (310, 311, 320, 325, 350); four intermediate and advanced studio courses from 309, 312, 313, 314, 315, 321, 322, 326, 327, and 351; four courses in history of art including 231 and 232 with two others from 333, 335, 336, 338, 340, 341, and Classics 221; two advanced art interims; and two semesters of 395. No more than eighteen courses in art may be applied to the degree. This program is not appropriate for those seeking teacher certification.

The liberal arts core must include:

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

Master of Arts in Teaching Degree

The Master of Arts in Teaching (M.A.T.) program serves elementary and secondary teachers who wish further professional training and who need to satisfy the requirements for continuing or permanent certification. The program can also serve the needs of college graduates seeking initial certification and of

those who wish endorsement in an additional teaching field or at a different level. With planning it can also satisfy the requirements of those states and provinces, such as California and Ontario, which require thirty semester hours of professional education beyond a bachelor's degree.

ADMISSION

The minimum requirements for admission to the program are a commitment to teaching, an appropriate bachelor's degree from an accredited college or university, and appropriate letters of recommendation. Applications for admission should be addressed to the dean for academic administration.

REQUIREMENTS FOR THE DEGREE

After students are admitted to the program the dean for academic administration assigns them to advisers in their declared area of interest. The student and the adviser will work out an appropriate program, subject to the approval of the director. 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 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. Any student receiving a grade lower than C+ in any course is placed on probation. The minimum requirements are:

1. **Context of Education:** Two courses are required. At least one course must be from those approved in psychology or sociology and education (Education 512, 513, 535, Sociology 501) and one must be from approved courses in history or philosophy and education (Education 510, 581, and Philosophy 501.)
2. **Concentration:** At least three courses must be completed in an approved group or departmental concentration. Programs of concentration have been developed in art, biblical and religious studies, English, history, mathematics, music, fine arts, language arts, learning disabilities, reading, school administration, social studies, and science. Additional programs and courses are under consideration. Courses designated with an asterisk and those numbered 500 or higher may be applied to M.A.T. programs.
3. **Methods and Materials:** A course in curriculum must be completed in an area appropriate to the student's need and concentration.
4. **Project:** The student must complete a half or full course project which is planned to synthesize his graduate experiences.
5. **Electives:** A student must complete additional courses from the categories above or from elective courses to satisfy the nine-course requirement.

A M.A.T. program may be combined with one leading to a Michigan provisional teacher certificate. Such programs include Education 301, 303, Education 581 or Philosophy 501, and two to four course units of teaching internship and seminar or the equivalent. Prospective elementary teachers must also complete Education 305 and 322. Major, minor, and general education requirements, usually met by undergraduate programs, must also be met. Such combined programs require more than the minimum of nine courses.

Master of Arts in Christian Studies Degree

The Master of Arts in Christian Studies program offers an opportunity to college graduates of any age or profession to engage in high-level study of the relationship of Christian faith to human understanding of reality. The director of the program through December, 1982 is Mr. George Marsden of the Department of History; after that the director will be Mr. Henry Hoeks of the Department of Religion.

ADMISSION

The requirements for admission are a bachelor's degree from an accredited college with a minimum average of B (3.0). Other students may be admitted provisionally for one semester. Candidates with major deficiencies in their undergraduate programs or lacking preparation in areas critical to this program, such as biblical studies or introductory philosophy, may be required to complete prerequisite courses in addition to the minimum courses required for the degree. Normally course work done previously at other institutions may not be applied to degree requirements. Inquiries and applications for admission should be sent to the Office of Admissions.

REQUIREMENTS FOR THE DEGREE

To be eligible for the degree a student must complete a ten-course unit program with a cumulative average of B (3.0). Such programs require twelve months and are worked out with an adviser. Only courses completed with grades of C+ (2.3) or higher may be applied to the degree. Five of the course units must be graduate-only courses, including a two course interdisciplinary sequence on "Christianity, Learning, and Culture"; a structured graduate reading course; and two units for a thesis. In addition the student must complete at least five course units in a specific 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. Students taking the various upper-level undergraduate college courses that will be suggested in each of these areas, or approved seminary courses, are expected to do work in these courses that is appropriate for graduate credit. In addition to the course requirements, a student must pass a comprehensive examination in his or her program area.

Programs for teacher education and other professions

Teacher Education Programs

Students wishing to be teachers should apply for admission to a teacher education program at the Department of Education during the second semester of their sophomore year. At that time they must have completed at least ten course units of college work with a cumulative average of C (2.0) and must provide evidence that they have had at least twenty-five hours of experience working with school-aged young people. To remain in the program students must maintain a 2.0 average in all of their courses, in their declared major and minor, and in their

professional education courses. In addition they must receive the positive recommendation of their instructor in Education 301-303 and, if in special education, their instructor in Education 216.

To be admitted to directed teaching students must, in addition, have completed at least twenty five course units including at least six in their major concentration, must have the approval of the Department of Education and of their major adviser, and must have completed all of their professional education requirements except for Education 304. Formal application must be made by February 1 of the school year preceding the anticipated directed teaching.

To be recommended for certification a student must have earned the appropriate bachelor's degree, including approved teacher education major and minor concentrations, must have earned at least a 2.0 in directed teaching, and must be recommended by his or her college supervisors.¹

Students failing to meet these standards will be dropped from the program. Appeals may be made to a review committee through the registrar.

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

Students from Ontario wishing to meet its requirements must complete four years of education (120 semester hours) beyond Grade 13 or five years beyond Grade 12 (150 semester hours). One year of that preparation (30 semester hours) must be in professional education courses, including practice teaching. In addition, students completing their teacher education in another province or state must also earn the teacher credentials of that province or state. At Calvin some students, particularly those with Grade 12 preparation, earn both a bachelor's and a master's degree while completing the requirements.

Students intending to teach in Christian schools in Ontario are not required to meet these standards but they are required for the Ontario Christian Teachers Certificate. For current information or any further clarification, consult Miss Madge Strikwerda, director of teacher certification, or Mr. Charles J. Miller, dean for academic administration.

Graduates who have earned a Michigan Provisional Certificate since July, 1970, must complete a 5.2 course unit (18 sem. hrs.) planned program or enroll in a master's degree program to qualify for a Continuing Certificate. The Master of Arts in Teaching program at Calvin can be used not only to satisfy the requirements for continuing certification but also to develop additional areas for certification and to qualify for initial, provisional certification. Graduates seeking such certification should consult the coordinator of elementary or of secondary education.

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

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.

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

Elementary education. The minimum elementary education program requires the completion of the general education requirements (See pages 39–43 for the courses recommended for studies in teacher education); either an approved group concentration of ten and a half courses or a departmental concentration of at least eight and a half courses; a planned program of six courses in other subjects which are related to elementary education or a six-course departmental minor; and the professional education courses. Students interested in elementary education should secure copies of the *Student Program Guide Book . . .* from the Department of Education. Programs should be worked out with Mr. William Hendricks, coordinator of elementary education, and have the written approval of the adviser in the area of concentration.

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

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

Language Arts Studies Group Major. English 100 and Speech 214 are required. Students majoring in this group must also complete one of the following five-course departmental programs: English 100, 200, 225, and two others; or Speech 203, 214, 215, and two others. In addition students must complete the three designated courses from the second department in this group. The remainder of the ten and a half courses and the electives must be chosen from departments in this group with the approval of the language arts adviser, Mr. Henry Baron of the Department of English.

Social Studies Group Major. The four required courses for this major are History 101 or 102; Sociology 151; either Economics 151 or Political Science 201 (United States), 210 (Canada), or 151; and either Geography 101 or, if part of the three-course sequence below, Geology 103 or 113. Students must also complete one of the following five-course departmental sequences: Economics 151, 321 or 322, and three others; History 101 or 102 and four others; Political Science 151, 201 or 210, 202 and two others; Psychology 151, 204, 310, and two others; Sociology 151 and four others. In addition, a student must complete three courses from a second department in this group, including any course designated above, or from a sequence in geography consisting of Geology 103 or 113 and Geography 201 and 210. Students should not take sequences in both psychology and sociology. The

remainder of the ten and a half courses and the electives must be chosen from departments in this group with the approval of the social studies adviser, Mr. Samuel Greydanus of the Department of History.

General Science Studies Group Major. The three required courses for any concentration in this group are: Biology 111, 131, 215, 216, or 217; Geology 103, 105, or 113; and Physics 112, 113, 222, or 225. The appropriate five and three course sequences can be completed in a variety of ways and must be worked out with the science adviser, Mr. Vernon Ehlers of the Department of Physics.

The recommended biological science sequence is Biology 107, 111, 215, 216, and 217. Certain interim courses may substitute for specific courses. The three course sequence should be chosen from the designated courses. The recommended geological studies sequence is one course from 103, 105, 113, 151; 152; 312; and two electives. The three course sequence should be chosen from the designated courses. The recommended physical science sequence is Astronomy 110, one course from Chemistry 103, 110, 113; one course from Geology 103, 105, 113; Physics 112; and one elective. The three course sequence should include a chemistry and physics course.

The five-course departmental sequences should include the following courses: biology, 111 or 131, 201 or 217, 202 or 215, 216 or 340; chemistry, 103, 104; physics, 123, 124, 181, 182, 225, 226.

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

The appropriate education courses for students in elementary education are 301, 303, 304, 305, 322, 324, 325, 345, and 355. The six-course planned program required for Michigan certification typically is met automatically by students meeting the general graduation requirements. Courses recommended for this dual function include: Art 215, Biology 111, 215, 216, or 217, English 100 and any literature course in English or in a foreign language; Geography 101, Geology 103 or 113, History 101 or 102 and any other history course, Mathematics 100, 121, 131, or 161, Music 238 or 239, Physics 112, 113, Psychology 204, Political Science 151, 201, or 210, and Speech 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.

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

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

middle school education will be scheduled during certain semesters. For information consult either Mr. William Hendricks, coordinator of elementary education, or Mr. Carl Mulder, coordinator of middle school education.

Secondary education. The minimum secondary program requires the completion of the general graduation requirements (see pages 39-43 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 the courses in another department or a group minor of seven; and six professional education courses. (After July 1, 1983 those applying for certification must also have a course in the teaching of reading.) Programs should be worked out with the appropriate departmental adviser and have the approval of Mr. Leroy Stegink, coordinator of secondary education.

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

Group concentrations have particular advantages for middle or junior high school programs but must be planned with care to meet the North Central standards defined in the paragraph below in addition to the standards of Michigan. A major group concentration consists of ten and a half courses, at least five of which must be in one department, three in another, and the remaining in either the same or related subjects. Such concentrations may be in the language arts (English, foreign language, speech), the sciences (earth science, biology, chemistry, geography, geology, and physics), and the social sciences (economics, history, and political science). Group minors of seven courses with the minimum of three in one subject may be chosen from the same areas and from the humanities (drama, literature in any language, philosophy, and religion and theology).

The North Central Association has requirements that differ from state and college requirements. It requires that teachers in the schools they accredit have the following minimum preparation in each of their teaching fields: *art*, seven course units; *English*, seven course units, a course and a half of which may be in speech; *foreign language*, six course units in any language taught; *mathematics*, six course units; *music*, seven course units; *physical education*, six course units; *science*, a total of seven 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 and middle school programs are: 301, 303, 304, 307, 308, 346, and 356; a course unit in the teaching of reading is required for those completing their programs after July 1, 1983.

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

Calvin College also offers a Bachelor of Science in Special Education degree in cooperation with Grand Valley State Colleges. This program requires four years and two summers to complete. Admission is limited to students who wish to teach the hearing impaired, emotionally impaired, or the physically impaired.

Students in cooperative programs with Grand Valley must complete a designated core of thirteen liberal arts courses, a departmental or group concentration, a six-course planned minor, six professional education courses, and the additional requirements for endorsement in special education.

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 have completed coursework in the education or psychology of exceptional children and in child or adolescent psychology. Two years of regular teaching experience is recommended. Students in this program complete two courses in the context of education, four and one-half courses in the learning disability concentration, two electives, and a project. Practicum experience is included. A non-degree program is also possible. Both programs satisfy the course requirement for continuing certification. Students interested in the master's degree program in learning disabilities should consult Miss Corrine E. Kass.

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

The additional course requirements for the seven-course program, which leads to an endorsement minor in bilingual education, are: Interdisciplinary 301, Introduction to Bilingual Education; English 329, Linguistics; Spanish 360, Spanish-English Linguistics; Spanish 373, Hispanic Culture in the United States; and either History 211, Survey of American History, if the student has little background in American history, or 356, Social and Cultural History of the United States.

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

Professional and Preprofessional Programs

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

Accounting

An accounting emphasis may be added to the Business concentration described under the Economics and Business Department by electing at least six accounting courses (or business law) in addition to 207 and 212, which are required by that program. The accounting courses offered at Calvin College are:

- 207 *Introduction to Financial Accounting*
- 209 *Income Tax*
- 212 *Financial and Managerial Accounting*
- 307 *Intermediate Accounting I*
- 308 *Intermediate Accounting II*
- 310 *Advanced Accounting*
- 311 *Auditing*
- 312 *Cost Accounting*

The academic requirements needed to qualify as a Certified Public Accountant (C.P.A.) vary among states; Michigan requires at least seven of the above courses including Economics 311 and, beginning in 1983, will require at least seven business courses including economics, business law, finance, and statistics.

Agriculture

Students may spend the first two years of their agriculture program at Calvin College before transferring to an agriculture college such as those at Michigan State University, the University of Guelph, or Dordt College. Students interested in such programs should consult Mr. Uko Zylstra of the Department of Biology.

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

A similar program is also possible at the Ontario Agricultural College of the University of Guelph. Students who enroll at Calvin College after Grade XII can apply to transfer after their sophomore year. The program at Guelph leads to a Bachelor of Science Degree in Agriculture after three additional years. The recommended program for such students is Biology 131, 201, 202, 222; Mathematics 161, 162; Chemistry 103, 104, 253, 254; Physics 221, 222; English 100; Economics 151; and other courses chosen from those that meet core requirements.

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

Architecture

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

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

Business Administration

Balanced preparation for a business career is provided by meeting the general degree requirements (page 39) and the Business concentration in the Department of Economics and Business. This program provides a minimum of twelve courses—the equivalent of forty-two semester hours—in business, economics, and related mathematics courses. See page 92 for a full description of departmental

major and cognate requirements. This concentration along with the general graduation requirements provides a substantial undergraduate coverage of the functions of the business firm, an understanding of the environment of business and human behavior, and an opportunity to develop one's personal Christian commitment and ethical sensitivity. Completion of the program provides a proper preparation for entry into a variety of business occupations as well as a foundation for graduate study in business.

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

<i>First year</i>	COURSES
Interdisciplinary W10 or elective	1
Economics 151	1
English 100	1
History 101 or 102	1
Foreign language	2
Mathematics 131, 132, or appropriate substitutes	2
Physical education	½
Religion and theology	1
Speech 100 or 240	½
<i>Second year</i>	COURSES
Art, music, or speech	1
Biology 111	1
Economics, 207, 212	2
Computer Science 131	1
Philosophy 151-152 or 153 and 205 or 207	2
Physical education	½
Physics 110, Physical Science	1
Psychology or sociology	1
Elective	1
<i>Third year</i>	COURSES
Economics 309	1
Economics 313	1
Economics 316	1
Economics 322	1
Literature	1
Religion and theology	1
Electives	3
<i>Fourth year</i>	COURSES
Economics 318	1
Economics 321	1
Economics 331-339 or 400	1
Electives	5-6

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

Engineering

Students planning to enter the engineering program should consult with Mr. James Bosscher of the Department of Engineering when arranging their programs. Students wishing to graduate from Calvin College on the combined curriculum plan must complete a minimum of twenty-seven courses with a minimum cumulative grade point average of C (2.0). If a student completes such a program and subsequently completes a degree program at a recognized school of

engineering, which typically requires an additional three semesters, he will also receive a degree from Calvin College—Bachelor of Science in Letters and Engineering on the combined curriculum plan.

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

<i>First year</i>	COURSES
Chemistry 103	1
Engineering 101	1
Engineering 102	½
Mathematics 161, 162	2
Physics 126 and 186	1 ¼
Interdisciplinary W10 (Interim)	1
Economics 151	1
English 100	1
Computer Science 141	½
Physical education	½
<i>Second year</i>	COURSES
Engineering 205	1
Engineering 202 or an engineering elective	1
Engineering 208 or 308	1
Mathematics 231, 261	2
Physics 225	1
Social Science elective	1
Philosophy 153	1
Literature, if needed for graduation, or a non-technical elective (Interim)	1
Speech 100	½
<i>Third year</i>	COURSES
Engineering elective	1
Technical elective, from 200 or 300 level courses in biology, chemistry, engineering, mathematics, or physics	2
Interim, engineering	1
Philosophy, 200 series course	1
Religion and Theology	1
Literature	1
Fine arts elective	1
Elective	1

By special arrangements with the University of Michigan, qualified engineering students in certain fields can elect a five-year program leading to a bachelor's degree from Calvin College and a master's degree in engineering from the university. Group majors involving engineering and mathematics, physics, or geology may lead to a bachelor of science degree in four years. Students should discuss these options with Mr. James Bosscher.

Forestry

Students planning to become certified foresters may pursue either a combined curriculum program in forestry involving study at both Calvin College and an accredited university school of forestry or they may work out transfer arrangements from Calvin College to a forestry school of their own choosing.

Normally, participants in the combined curriculum program in forestry spend three years at Calvin College plus two years at a school of forestry. Graduates from the combined curriculum program receive two degrees. The Bachelor of Science in Letters and Forestry is granted by Calvin College to students completing twenty-seven courses in the combined curriculum program in forestry at Calvin College plus one full year of academic work toward a forestry degree at an accredited forestry school. Upon completion of forestry school graduation requirements students receive the degree in forestry given by that school.

The science requirements for the program are: Biology 131, 201, 202, 222, and three from Biology 332, 341, 346, 352; Mathematics 161-162 or 131-132; Geology 151; and a two-course sequence in the physical sciences from Chemistry 103-104, 113-114, Physics 221-222, or Chemistry 113 with Physics 223. The non-science requirements are: one course each in history, philosophy, and religion and theology, with an additional course from one of the three or Interdisciplinary W10 in the interim; Economics 151 plus one additional course from economics, sociology, psychology, or political science; one course in American or English literature with two additional courses in art, literature, music, speech, or foreign culture; English 100; and Speech 100 plus two semesters of basic physical education, or four semesters of basic physical education.

Calvin College is one of several colleges in Michigan participating in a cooperative program in forestry with the School of Natural Resources at The University of Michigan. The prescribed courses above meet the pre-forestry requirements of that program. Graduates from this program receive a professional forestry degree, the BSF degree, from the University of Michigan. Students planning to attend the University of Michigan are advised to elect Psychology 151 or Sociology 151 as the additional social science course. In addition, Mathematics 131-132 is preferred over Mathematics 161-162; at least one course in chemistry is required, and Computer Science is recommended. Students planning to attend the University of Michigan are expected to enroll in a summer forestry camp session at Camp Filibert Roth following their sophomore or junior year at Calvin College.

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 need to 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.

Forestry schools differ in their program requirements. Students expecting to attend a school other than the University of Michigan are advised to select courses from among the options listed above which best meet the requirements of the

school they are considering. Students enrolling in the combined curriculum program in forestry and those seeking advice about transfer arrangements in forestry should consult Mr. Alan Gebben, pre-forestry adviser, in the Department of Biology.

Law

There is no prescribed program specifically designed for the student planning to enter a law school after graduation. Law school applicants must have a college degree and must take the Law School Admission Test, but law schools do not require that applicants have taken specific courses or have a particular major concentration. Prospective law school applicants should complete the requirements for a Bachelor of Arts degree as they are listed on page 39. The pre-law adviser, Mr. Johan G. Westra of the Department of Political Science, can advise students on suitable electives and can help them plan programs which provide good preparation for law school. Since admission to law schools has become very competitive, some students may be advised to plan programs which will also prepare them for alternate careers in other fields such as business, social work, or teaching. Pre-law students should declare they are pre-law at registration time and are advised to consult the pre-law adviser before or during each semester's registration. Juniors and seniors, whatever their field of major concentration, should choose their electives with care and in consultation with the pre-law adviser.

Medicine and Dentistry

All students planning to enter the premedical or pre dental programs should consult Mr. Peter Tigchelaar of the Department of Biology, faculty adviser of the premedical and pre dental programs. Students should also note the general college admission requirements on page 39.

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

The minimum science requirements for this program are Biology 131, 202, 206, and two courses from 323, which is recommended, 331, or 336; Chemistry 103-104, 301-302, and one course from 201, 204, or 303; Physics 221-222 or the equivalent. Mathematics 161-162 is recommended and, ideally, should be taken before the physics course.

Premedical and pre dental students 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 should complete twenty-seven courses, including the program prescribed above, and at least eleven designated core courses in subjects other than foreign language, mathematics,

and the sciences. For their electives, students should choose such subjects as are required for admission to the particular medical or dental school which they expect to attend. Upon satisfactory completion of this course and one year of successful work in a recognized medical or dental school, the student will be eligible on the combined curriculum plan for the degree of Bachelor of Science in Letters and Medicine, or Bachelor of Science in Letters and Dentistry.

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

Medical Technology

To qualify for the degree of Bachelor of Science in Letters and Medical Technology on the combined curriculum plan a student must complete twenty-seven courses plus twelve months of successful work in an accredited school of medical technology. Students wishing to enter the medical-technology program should consult Mr. Hessel Bouma of the Department of Biology. The following courses are prescribed: Biology 131, 205, 206, 324, 334, and 336; Chemistry 103, 104, 253, 254, and one other; one mathematics course from 161 or 132; English 100; Physics 223; History 101 or 102; one course in philosophy; one course in religion and theology; one additional course from history, philosophy, religion and theology, and Interdisciplinary W10; two courses from economics, political science, psychology, and sociology; three courses from art, literature, music, speech, and foreign culture including one from English or American literature; the total of one course unit credit from the core courses in speech and basic physical education; and one foreign language through the first year college level, a requirement which may be fulfilled by two years of high school study.

A typical student program is as follows:

<i>First year</i>	COURSES
Biology 131, 205	2
Chemistry 103, 104	2
English 100	1
Foreign language (See paragraph above)	2
History 101 or 102	1
Interim	1
Physical education	½
<i>Second year</i>	COURSES
Biology 206, 324, 334	2
Chemistry 253-254 or 301-302	2
Other required courses	4
Interim	1
Physical education	½
<i>Third year</i>	COURSES
Biology 336	1
Chemistry 201, 204, or other chemistry course	1
Other required courses	4
Physics 223	1
Free elective	1
Interim, biology	1
<i>Fourth year</i>	
Internship in an accredited school of medical technology.	

The Ministry

The Association of Theological Schools (A.T.S.) recommends that 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. The A.T.S. discourages concentrations in the study of religion which would duplicate later seminary work and which would narrow the liberal arts base for later theological studies. 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.

In order to qualify for admission to Calvin Theological Seminary in any of its programs the student should meet all of the regular college requirements for a bachelor's degree as well as the specific course requirements of the seminary for the specific programs. A grade point average of 2.67 or higher is required for admission. Concentrations of particular relevance to theological studies are: English, Greek, history, philosophy, psychology, and sociology.

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

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

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

The foreign language requirement may be met by the successful study of one foreign language through the second-year college level or by demonstrated competence at this level. Dutch is recommended as the preferred language and German as the second choice, but other languages are acceptable.

The Master of Church Education program is for persons who do not seek ordination who wish to prepare themselves for other positions of leadership in the church, particularly in its educational ministry. The courses required for admission are typically met by the college graduation requirements except for the addition of a requirement that the candidate complete two courses from education and psychology including a course in educational psychology.

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

Natural Resources

Students interested in any of the many fields of natural resources can attain their goals in a number of ways. Because of the variety of programs possible, such students should consult with Mr. A. Bratt of the Department of Biology early in their college careers to determine the requirements of the program most appropriate for them.

Professional competence in most areas of natural resources requires work beyond the bachelor's level and graduate degrees are becoming necessary for employment. Students interested in research and management in wildlife or fisheries should follow a program leading to a major in biology at Calvin, followed by specialization at the graduate level. Other opportunities which require less emphasis on biology and related sciences include regional planning, environmental education, outdoor recreation, resource ecology, resource economics and management, resource policy and law, and environmental advocacy. Entry to these fields often requires careful academic preparation that must be worked out with the adviser to meet the requirements of the graduate school selected.

A cooperative five-year program requiring three years at Calvin and two at the University of Michigan, is flexible and appropriate for some students. At the end of the first year at the university Calvin awards a Bachelor of Science in Natural Sciences to those who have completed twenty-seven courses at Calvin with a minimum average of C including thirteen designated core courses. At the end of the following year, provided the required courses are taken, the university grants a Bachelor of Science in Natural Resources degree. Most courses in these programs are prescribed.

Students may also plan to transfer to the university after two years. Typically such students take Biology 131, 201, 202, 222, Chemistry 103, 104, Computer Science 141 or 151, Mathematics 131-132 or 161-162, and, if interested in fisheries, Chemistry 301, 302. The remaining courses should be in the humanities and social sciences to meet the University of Michigan requirements.

Duke University in Durham, North Carolina, offers a cooperative program with Calvin College in the area of natural resources and environmental studies. Students may enter either after three years at Calvin or after graduation. Master of Forestry and Master of Environmental Management programs are available. These programs are described under Forestry on page 57.

Michigan State University also provides training in various sorts of natural resources fields. The two-year "non-preference" program described under Agriculture on page 54 prepares students to enter these programs. Students can transfer to other universities as well. The course requirements listed above are typical and serve as general guidelines.

Nursing

Students interested in nursing have several options. They may also follow a four-year program leading to a Bachelor of Science in Nursing degree or they may follow a two and a half year program leading to a nursing diploma without a college degree. Students interested in a baccalaureate nursing program have two options at Calvin College. They may follow a four-year sequence leading to a Bachelor of Science in Nursing (B.S.N.) degree through the Hope-Calvin Department of Nursing or they may begin the program at Calvin and complete the nursing component at another college or university.

Hope-Calvin B.S. in Nursing Program. Calvin, in cooperation with Hope College in Holland, seeks to provide broad educational and professional experiences within the context of a Christian liberal arts education. The program 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.

Students enrolled in the nursing program engage in a wide variety of clinical nursing experiences. Butterworth Hospital and Holland Community Hospital serve as clinical education centers providing opportunities to care for people who need the knowledge and skills of the nursing profession. Pine Rest Christian Hospital provides learning experiences in psychiatric nursing and a variety of community agencies offer students an opportunity to care for clients outside of the hospital setting.

Upon completion of all requirements, students receive the B.S.N. degree from Calvin College and are eligible to take state licensing examinations to become a Registered Nurse (R.N.). Students are encouraged to contact the chairman, Miss Cynthia E. Kielinen, for further information.

The following courses are prescribed prior to admission to the professional nursing program: Biology 131, 205, 206, and 336; Chemistry 113 and 114; Psychology 151 and 201; and Sociology 151. Thirteen additional courses are prescribed: one course in history; one course in philosophy; one course in religion and theology; one additional course in history, philosophy, religion or CPOL; one course in literature taught in English; two courses chosen from arts, music, speech, literature, or foreign culture, including language; one course in written rhetoric; half course in spoken rhetoric; half course in physical education; and four electives.

A typical student's 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
Art, music, etc.	1
Religion, history, philosophy or Interdisciplinary W10	1
Physical education	½

<i>Second Year</i>	COURSES
Biology 206, 336	2
Psychology 201	1
Religion	1
History	1
Literature	1
Philosophy	1
Art, music, etc.	1
Speech 100	½
<i>Third Year</i>	COURSES
Nursing 301, 311, 321, 373, 352, 375	7¼
Elective	2
<i>Fourth Year</i>	COURSES
Nursing 375, 401, 472, 474, 482	6¾
Elective	2

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

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

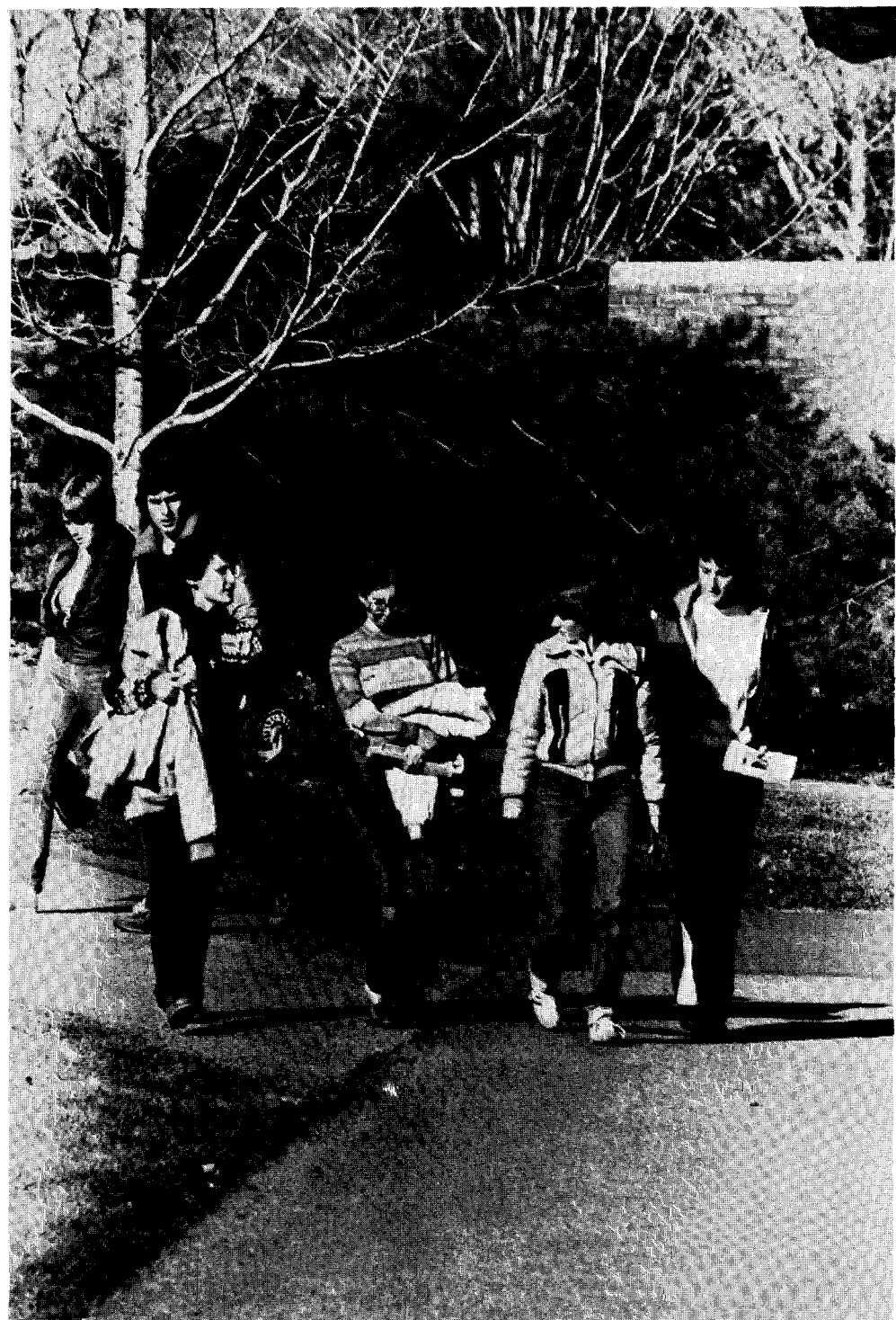
B.S. in Nursing Transfer Programs. A Bachelor of Science in Nursing program may also be begun at Calvin and be completed at another college or university. Students interested in such programs involving a possible transfer to another school or in the Blodgett program should work out their programs with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

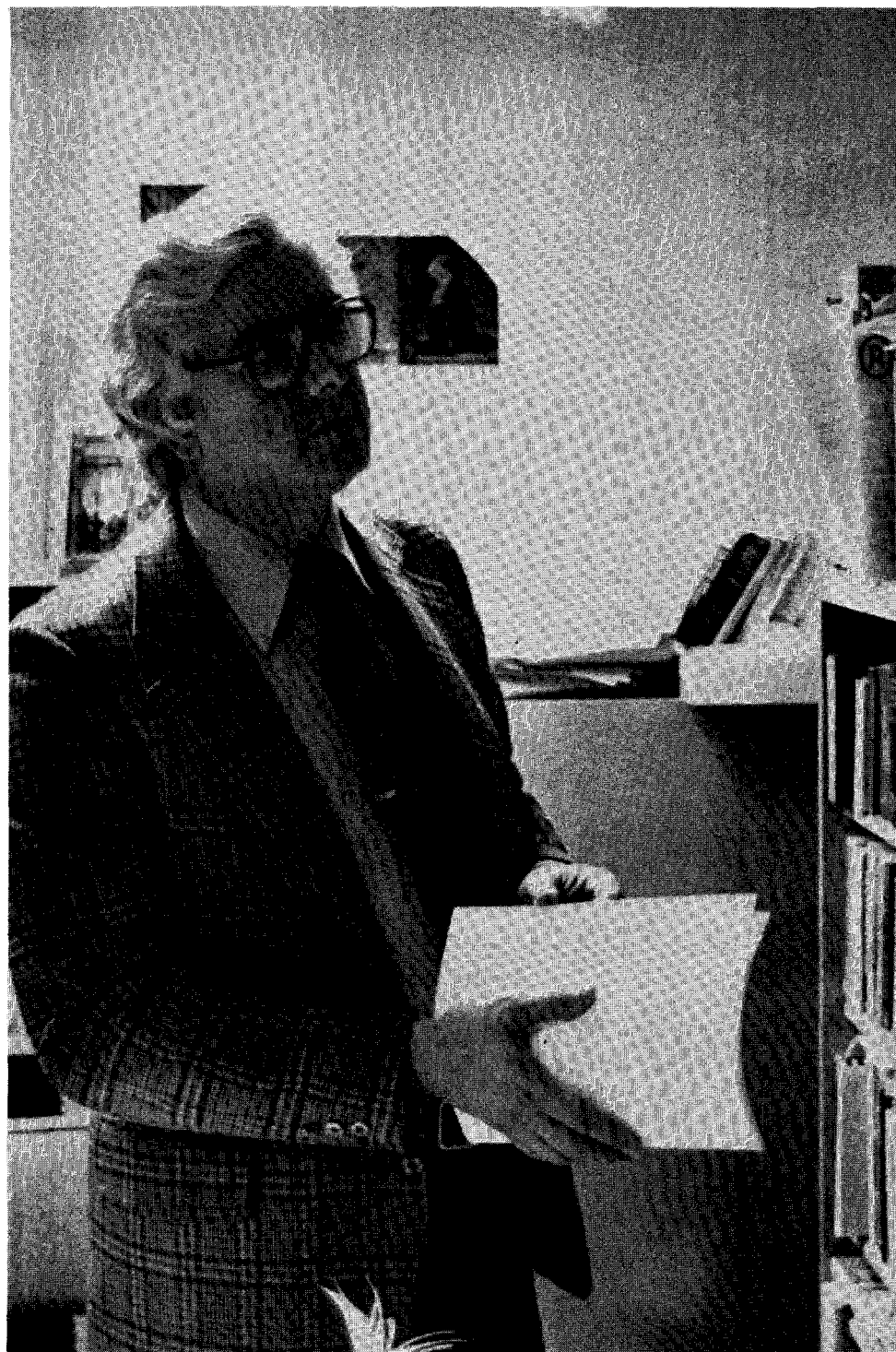
Recreation

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

Other Professional Programs

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





COURSES

Description of courses offered by the various departments

The symbols F (Fall), I (Interim), and S (Spring) indicate when each course is offered. The term core designates those courses in each department which meet the general graduation or core requirements of the discipline. The few courses which carry more or less than a single course credit are indicated; all others carry a single course credit. Courses regularly offering honor sections are indicated; honor registration in any course is possible subject to the approval of the instructor. Interim courses numbered I-10 through I-49 have no prerequisites; those numbered I-50 through I-99 have either prerequisites or other conditions. Courses numbered 500 and above and those marked with an asterisk may be applied to Master of Arts in Teaching programs.

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

Interdisciplinary¹

Courses in less commonly taught languages completed through supervised, self instruction are included in this section of the catalog and follow the traditional numbering of foreign language courses, 101, 102, 201, and 202. See page 44 for a description of the program.

210 History of Science. S. 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) and two courses in science or the consent of the instructor. Physics 110 or its equivalent should be one of the science courses taken by students not majoring in science. A. Leegwater.

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.

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

301 Introduction to Bilingual Education.* This course is designed to prepare teachers who will 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. After the completion of the course each student will observe and then practice in local bilingual classrooms. Prerequisite: completion of a 202-level course in an appropriate modern foreign language. Staff.

GRADUATE COURSES

561 **Christianity, Learning, and Culture I.**

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

562 **Christianity, Learning, and Culture II.**

I. This course is a continuation of the fall course, concentrating on more specialized topics chosen after consultation of professors and students. Prerequisite: 461. *Mr. G. Marsden.*

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.*

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

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

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

JANUARY 1983 INTERIM

W10 **Christian Perspectives on Learning.** An introductory study of the relationship between Christian faith and learning. Beginning with a consideration of some contemporary alternatives and challenges to Christianity, the course proceeds to an examination of current statements of the nature of Christian faith and discipleship. The

course culminates in an examination of how different views of Christian faith and its relation to culture produce different kinds of secular and Christian colleges. The ground is thus laid for a critical examination of one's academic experience at Calvin College. Taught by a committee representing the several disciplines and open to freshmen and sophomores. *Mr. J. Cooper (chairman).*

W11 **Introduction to Frisian.** This course will introduce students to the language, history, and culture of the Frisians. Its main aim will be to help students gain some elementary facility in the reading, writing, and speaking of Frisian, but the course will also include lectures, readings, and visual presentations on Frisian history, culture, and present-day life. Evaluation will be based on performance in vocabulary quizzes and the oral and written work of the students. *Mr. H. Baron.*

W12 **Earthkeeping.** God created our planet and its resources, and instructed us to care for it. Unfortunately, during the past two centuries we have abused Earth more often than we have tended it. This course begins with a detailed examination of the current state of Planet Earth and its resources, with special emphasis upon energy, minerals, and food. Students will review human attitudes toward nature, particularly those influenced by Christian thought, current resource use patterns, and projected depletion times of these resources. Throughout the course, emphasis will be placed on our responsibility as Christians in the stewardly use of Earth and its resources. Students will be permitted to spend a few days working on an individual research topic. *Mr. H. Aay, Mr. V. Ehlers.*

W13 **Career Planning in a Christian Context.** The focus of this course is on the process of career planning by the Christian. Because career decisions both reflect and influence many aspects of life, coverage includes self-assessment of abilities, interests, personality variables and values; sources of occupational choice; the significance of work; the nature of college students; the goals of a Christian liberal arts education—in short, individual career planning in the context of Christian beliefs, theoretical explanations, and specific information. Regular attendance, daily readings, small-group exercises, and a synthesizing paper. *Mr. W. Joosse, Mr. J. Hollebeek.*

W14 **Students, Teachers, and the Law.** Students will examine in a non-technical

way legal cases regarding rights and responsibilities of both students and teachers. Cases involving limitations on rights of political and religious expression, dress codes, and others will be studied in order to build a survival kit for both teachers and students. To acquaint class members with the legal guidelines affecting the classroom, students will utilize debates, simulations and role-playing. A paper which critiques one of the issues is required. *Mr. D. Oppewal.*

W15 What is the Baroque? A study of the Baroque period through its literature, music, and art. The course is organized after Wylie Sypher's *Four Stages of Renaissance Style*: renaissance, mannerist, baroque, and late baroque. Lectures and class discussions emphasize the literature and art considered in Sypher's book along with the representative musical works from the same period. These will be studied against the background of the major social and intellectual currents of the time. Two papers: one in the field with which they are most familiar, the other in a field with which they are less familiar. Prerequisites: familiarity with one of the arts. *Mr. S. Wiersma, Mr. C. Stapert.*

W16 Dante: The Divine Comedy. The purpose of the course is to read in its entirety the *Divine Comedy* of Dante Alighieri (1265-1321) in English translation. General introductory lectures on the poet and his age will accompany reading and discussion of the text. A short paper on an individual canto of the poem. *Mr. H. Rienstra.*

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

W19 Spiritual Resources for Teachers. A course in which students who are considering or are firmly committed to teaching careers will read a variety of devotional classics and discuss the various relationships between the teacher's devotional life and professional life. Required reading are Richard Foster's *Celebration of Discipline* and Henri Nouwen's *Reaching Out*. Each student will also read and report on the devotional writings of Aquinas, Augustine, Bloom, Calvin, Fenelon, Kempis, Kuyper, Law, Lewis, Lovelace, Luther, Nee, Packer, Schaeffer, Smith, Tozer and others. If possible, visits to group devotional periods for the teaching staff of various Christian schools and interviews with Christian teachers. Lectures, reports, analysis, discussion, with emphasis on group devotions. Examination on assigned texts; reading reports and personal position paper. *Mr. D. Topp*

W20 Ancient Greek Civilization: On Location. An escorted tour of sites in mainland Greece and Crete selected for their importance in the flowering of classical literature, philosophy, religion, and the arts. Before departure each student will have completed a basic reading assignment and must submit a statement of his or her educational goals for the trip. During the trip each student will keep a journal, and upon return, will submit this journal along with a short paper assessing the trip's success in meeting the stated educational goals. All students in good standing are eligible; prior course work in Greek language, literature, and history is helpful, but not necessary. Fee: approximately \$2,000. Permission of the instructor. Off campus. *Mr. C. Orlebeke.*

W21 Women and Changing Work Roles. An investigation of how and why the work life choices of women are changing. This course examines the implications of these changes for future employer policies as well as personal career choices and family lifestyles. Course resources include readings on women and work, speakers, field trips, and student contributions on women and work research topics. Open to freshmen with permission of the instructor. *Mrs. S. Roels.*

W22 Wooden Shoes in America: A Study of the Christian Reformed Church in North America. A survey analysis of the Christian Reformed Church. The survey includes consideration of the broader European anteced-

ents, the nineteenth century secession movements in the Netherlands, the American religious and cultural context in which the Christian Reformed Church was planted, and the growth and development of the Christian Reformed Church in the United States and Canada. Students will analyze the church in terms of its worship, beliefs, organization, and subcultural way of life, with emphasis on the interaction of the Christian Reformed Church with American culture, and the current problems and challenges facing the church in these last decades of the twentieth century. Lectures, discussions, books, articles, film strips, student papers, and guest speakers. *Mr. H. Brinks.*

W23 High on Sports? Why does a baseball curve? How should a high-jumper clear the bar? Why does a golf ball have dimples? Can a discus travel farther into the wind than with it? From track to tennis, from sculling to soccer, from baseball to billiards, students will analyze sports activities in scientific terms accessible to the average student. Some independent study and a paper. *Mr. J. Timmer, Mr. J. Van Zytveld.*

W24 The Power of Critical Thinking. A study of the complex operations which relate to thinking and information processing, with application to college texts in various disciplines. The instructional model for critical thinking is a pattern of interrelated skills, such as classifying, comparing, sequencing, hypothesizing, summarizing, and interpreting. Lectures, readings, discussions, and written reports will require students to analyze written material with the purpose of refining their thinking skills. *Mrs. K. Blok, Mrs. E. Diephouse.*

W25 Africa: An Introduction for Non-Africans. This course presents a broad brush picture of the African scene today to enable students with little prior acquaintance to understand the major social, political, and economic features of contemporary Africa, the changes that are occurring, and the upheaval that is resulting from those changes. These problems are set in the context of the conflict between traditional African culture and the forces of modernization and Westernization. All phases of the African scene—religion, art, music, education, etc.—will be touched upon. The student is expected to relate his particular area of interests by writing a short paper on what is happening in Africa today. For example, an art major will

write on African art. Readings include a text and a novel by a contemporary African writer. Permission of the instructor. *Mr. J. Orkar, Mr. D. Wilson.*

W26 Music Theater in America. A study of the history, practice, style, and technique of four forms of music theater—opera, operetta, musical comedy, musical revue—in America. The course attempts to give students an understanding of the genres of music theater, to have them develop an appreciation for the styles of music theater, and to develop an awareness of the unique production problems of music theater. Films, filmstrips, lectures, and a field trip, which is dependent upon productions in the vicinity. Possible fee of \$25. *Mrs. E. Boevé, Mr. J. Worst.*

W50 Background to Blitzkrieg: Social and Economic Aspects of World War II in Europe. World War II is one of the most significant events of the twentieth century. To understand the social, political, and economic causes of it, the student will focus on the Versailles Treaty ending World War I, the social origins of the Nazi movement, the military thinking and planning of the interwar period, and then assess the economic consequences of it and the post-war impact of the Anglo-American-Soviet victory on present day Europe. Paper and written examination. Prerequisite: one history course. *Mr. J. Dodge, Mr. F. Robert.*

W51 The Movie Genre. A study of the major American film types, this course includes only films in which the narrative pattern, or crucial aspects of that pattern, is visually recognizable as having been used in a similar way in other films. Films are selected not only for their importance in the formation or presentation of a genre but also for their own intrinsic artistic, intellectual, and cultural significance. Besides engaging in critical analyses of a sampling of genre films, students will read some related fiction and considerable film commentary. Short papers and quizzes. Fee: \$10. Not open to freshmen. *Mr. G. Harper, Mr. I. Kroese.*

W52 Calvinist Roots: Radical or Conservative? Is the Calvinist tradition in social, political, and economic thought radical or conservative? What are, and what ought to be, a Calvinist's attitude toward such questions as the right to revolt, the proper assessment of capitalism, class struggle, relations between rich and poor? Emphasis is on

Calvin's Geneva and Dutch Calvinism, especially the careers of Groen van Prinsterer and Abraham Kuyper. Attention is given to Calvinism in the United States, Canada, and South Africa. Lectures, discussions, readings, guest speakers, and student papers. Context of Education core. Prerequisite: sophomore standing or above, or permission of the instructor. *Mr. J. Westra.*

W53 Sport and Play in Christian Society. This course is designed to enable the student to develop his/her own philosophy of sport and play for a Christian in a sound manner and to evaluate the current situation. The student will attempt to define amateurism and professionalism, the work ethic versus the play ethic, and to examine modern practices in big-time sport, religion and sports, educational institutions and sport, and the ethics of sport and play. Lectures, visiting specialists, and paper to be used as basis for group discussions each session. Take-home examination as a summation of the student's views of sport and play. Prerequisite: philosophy, sociology core or its equivalent. *Mr. B. Steen.*

W54 Theater Interim in England: The Critic. During the twenty-one days in England, students will visit London and Stratford, two cities which hold a special appeal for students who are interested in the theater. In addition to attending fifteen performances ranging in style from classical to modern, students will attend lectures taught by the course instructors, performers, directors, and critics, and will engage in discussion, reading, and writing assignments primarily on the function and requirements of dramatic criticism. Excursions around London, to Oxford, Canterbury, and an overnight stay in Stratford. Weekends will be free to permit students to make short trips. Permission of the instructor. *Mr. D. Holquist, Mr. J. Korf.*

W55 Economic Justice. The objective of the course is to develop a critical understanding of the issues of economic justice through study and discussion of selected writings by Christian and non-Christian philosophers and economists, with special attention to the contributions of Rawls, Nozick, and the Christian theorists. Readings and analysis of assigned material for lecture and discussion and a final examination; for "honors", a research paper on a topic approved by the instructor. Prerequisite:

Economics 151 and one philosophy course. *Mr. E. Beversluis.*

W56 Computer Applications in Modern Society. Students will examine the present and future role of computers in our society and some of the applications of computers in the areas of education, business, science, and medicine. Topics to be discussed include Computer-Aided Instruction (CAI), simulations, robotics, an overview of personal home computers, and an introduction to BASIC programming. Not recommended for those who have taken or plan to take Computer Science 100, 107, or 108. *Mr. A. Shoemaker.*

W57 Conducting the Helping Interview. A basic course in teaching interviewing skills for those who wish to enter a helping profession. Focus is on the initial interview; it is not on diagnosis and treatment. Primary emphases are on an overview of the most prevalent personality theories, training in empathy and active listening skills, practice of these skills in videotaped roleplays and building the relationship. Lectures, roleplays, videotapes, films, and speakers from the community. Prerequisite: junior or senior status in the supplementary concentration in social work or permission of Mr. Houskamp or Mr. Smalligan. *Mrs. S. Verwys, Miss S. De Waard.*

W58 Radical Resocialization. A study of several groups, such as the Unification Church (the "Moonies"), the People's Temple, Krishna Consciousness, and Synanon, which operate in contemporary Western society from a social-psychological and from a theological perspective. Students will examine a cross-section of material dealing with the process of resocialization in these groups which offer the promise of new life (conversion) and which question the reasons for joining such groups. The meaning and appropriateness of the term "cult" to describe many of these groups, the techniques or methods used to "convert" the person who has joined, the function of the group's belief system among the group's adherents, and the ways in which the groups maintain a commitment to the "faith". How does the Christian address such group efforts? What similarities exist between these groups and the groups whose attempt to function as agents of behavior change is sanctioned by society as a whole? Prerequisite: Sociology 151 or Psychology 151. *Mr. R. Houskamp, Mr. L. Sweetman.*

W59 The European Image of America. This course is conceived of as a "reading seminar". Students will study the European image of America by reading a variety of published works on the subject. Three groups of published works will be studied: the analyses of intellectuals such as Alexis de Tocqueville, James Bryce and Alistair

Cooke; the literature of immigration, most notably letters written home by "ordinary" immigrants; fictional accounts, such as those by Charles Dickens and Evelyn Waugh. Three critical essays are drawn from each group of sources. Prerequisites: History 102 and a college-level course in American history. *Mr. R. Wells.*

Academic support

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

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

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

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

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

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

005 Pre-College Mathematics for the Sci-

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

006 Methods and Motivation for College Study. F and S, non-credit, half-course. This course presents methods of classroom and textbook study skills for college coursework, 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. Students are required to complete individual projects applying these principles to their other course work. Prerequisite: concurrent registration in a reading and lecture course such as history or religion course. Open by permission only. *Staff.*

007 Pre-College Grammar Review. F and

S, non-credit, half-course. This course, taught concurrently with certain sections of English 100, provides supplementary instruction and exercises in grammar. Open by permission only. *Staff.*

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W21 American English and Its Cultural Context. This is a course for students whose native language is other than English and who need to increase their skills in speaking and understanding English. Students will attend lectures, plays, and films to cultivate their listening and note-taking skills as well as to analyze cultural content. Discussion groups and speeches will provide intensive practice in both formal and conversational English, and will consider problems of cross-cultural misunderstanding which arise from American customs and attitudes. Students will be required to demonstrate improvement in oral proficiency as well as mastery of lecture content and vocabulary. The class meets both morning and afternoon. Open by permission only. *Staff.*

W24 The Power of Critical Thinking.
Mrs. E. Diephouse.

Art

Professor E. Boevé

Associate Professors C. Huisman, R. Jensen (chairman), C. S. Overvoorde

Assistant Professors H. Bonzelaar, J. Kuiper

Instructors M. Bolt, V. Bullock

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

The minimum major program in art is 205, 209, 210, 231, 232, 310 or 311, 320 or 325, and three courses from 309, 312, 313, 321, and 326. All art majors are required to participate in senior exhibition during the spring semester of their senior year.

The minimum major program in art history is 231, 232, six courses from 333, 335, 336, 338, 340, 341, and Classics 221, and an approved interim course in art history. Philosophy 208 is recommended. The minor requires 231, 232, and four from 332, 335, 338, 340, and Classics 221.

The Bachelor of Fine Arts (B.F.A.) program, which has a greater professional

emphasis, is described on page 46. This program is not a preparation for teacher certification.

The ten and a half course major for teachers, k-12, must include 205, 209, 215, 216, 231, 232, 310 or 311, 320 or 325, and 210 or 340. The seven course teacher education minor is 205, 209, 215, 216, 231, 232, and one studio course from 310, 311, 320, 325, 350. All art education students are required to participate in the senior exhibition during the spring semester of their senior year. The advisers for these programs are Mrs. H. Bonzelaar and Mr. J. Kuiper.

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. Lecture and participation in the basic elements and principles of art. Emphasis placed upon the student's involvement and response to materials and ideas. Not a part of major or minor program. *Staff*

STUDIO COURSES

205 Design. F and S. A course that teaches two and three-dimensional design through the use of basic art elements and principles. *Mr. R. Jensen, Mr. C. Huisman.*

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 and 208. *Mr. C. Huisman, Mr. R. Jensen.*

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. Prerequisite: 209. *Mr. M. Bolt, Mr. R. Jensen.*

215 Principles of Elementary Art Education. F and S, core for students in elementary education only. A course emphasizing methods and techniques of organizing and motivating art instruction on the elementary school level. It includes lectures, demonstrations, and art teaching experiences in the school situation. Research paper required. Not open to freshmen. *Mrs. H. Bonzelaar, Mr. J. Kuiper.*

216 Principles of Secondary Art Education. F. A course emphasizing methods and techniques of organizing and motivating art on the secondary school level. Media include clay, enameling, jewelry-making, weaving, batik, printmaking, and painting. Prerequisites: 205, 209. *Mrs. H. Bonzelaar.*

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

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

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

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

313 Intermediate Ceramics.* F. 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, which is prerequisite, with

a primary concern for developing each student's skills and individual expressive direction. Materials fee. *Staff*.

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

320 Introduction to Printmaking.* F and S. An introduction to the four basic printmaking media—relief, intaglio, serigraphy, and lithography—through slide presentations, lectures, readings, and demonstrations. Each student will choose one basic medium to explore during the semester. Materials fee. Prerequisite: 209. *Mr. M. Bolt, 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. M. Bolt, 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. M. Bolt, 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: 209. *Mr. M. Bolt, Mr. J. Kuiper*.

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. M. Bolt, Mr. J. Kuiper*.

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. M. Bolt, Mr. J. Kuiper*

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

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

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

395 Seminar and Exhibition.* F and S, half course. An opportunity for a Christian perspective to integrate the study of art history, aesthetics, and the other liberal arts as well as the work in studio art. The seminar will include regular meetings with the faculty, the writing of a scholarly statement of the candidate's philosophy of art, a study of exhibitions in art galleries and museums, and the presentation of a one-man show. Prerequisite: senior status and a concentration in art. *Mr. C. Overvoorde*.

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

350 Introduction to Graphics, Mr. R. Jensen

351 Intermediate Graphics, Staff.

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, Mrs. V. Bullock*.

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

333 **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 complete 231 and 232 before taking this course. *Mr. E. Boevé.*

335 **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. Not offered 1982–83.

336 **Northern Baroque.** F, core. A study of seventeenth-century Dutch and Flemish painting, including an historical survey of the art produced in Antwerp, Haarlem, Leiden, Utrecht, Amsterdam, and Delft and a tracing of 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, Rubens and Rembrandt (formerly 332). *Mr. C. Overvoorde.*

338 **Nineteenth Century Art.*** S, 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. *Mrs. V. Bullock.*

340 **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.*

341 **Oriental Art.** Core. A study of the sculpture, painting, and architecture of Asia Minor, India, Indo-China, China, and Japan. Major Buddhist and Islamic periods and styles are covered. Slide lectures and

discussions; a research paper is required. Art history majors complete 231 and 232 before taking this course. *Mr. E. Boevé.*

The following classics course may be included in art concentrations.

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

GRADUATE COURSES

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

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

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

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W10 **Cartooning.** This course introduces students to the creative art of cartooning through various media and techniques of cartooning as well as its history and influences on society. The theories and techniques of humor will be studied and applied to the individual production of cartoons relating to a variety of expressive themes. Lecture/discussion, individual cartoon production, example presentations, and special resource personnel. Cost of materials will amount to about \$20 per student. *Mr. R. Jensen.*

W11 **Documentary Filmmaking.** This course is designed to involve the student in the study of the documentary film through choosing, planning, and producing a short documentary film, as well as from readings and from writing a script. Students will work in teams while dealing with aspects of techniques and equipment, which will be provided, in the production of documentary films. Film and processing fee of approximately \$30. *Mr. J. Vanden Bosch.*

W12 **The Bauhaus—Its Comings and Goings.** This course traces the historical development of modern aesthetic criteria and the rise of a new art education to deal with

the challenge of the Industrial Revolution. Bauhaus ideals and influence will be explored and reassessed. Slide lectures, assigned reading, two exams, a field trip, and a research paper. *Mrs. V. Bullock.*

W50 Clay for the Wall. By drawing on and into its surfaces, creating wall constructions, and working in shallow relief and mosaic, students will explore clay as a medium of expression. Forms will be finished and appropriately fired. Slide lecture, demonstration, assigned reading, and a short paper will also be required. Fee: \$25. Prerequisite: 205. *Mr. C. Huisman.*

W52 Forms in Fiber. Students will explore textile techniques, including batik, soft sculpture, and off-loom weaving by combining simple textile techniques in two or three dimensional designs. Students and instructor will present research papers on primitive and contemporary fibers. Fee: \$20. Prerequisite: 205. *Mrs. H. Bonzelaar.*

W53 Artists Working in New York City. This course gives art majors an opportunity to experience the effects of the New York environment as they live and work in Soho. Assigned readings, visits to galleries, museums, and artists' studios, and discussion with artists, gallery directors, and museum curators will supplement their creative activity. Fee: each student must be prepared to spend about \$625 and extra for entertainment and shopping. Prerequisite: one course from 310, 311, 320, or 325 and permission of the instructor. Off-campus. *Mr. M. Bolt.*

W54 Collage. This course covers the history of collage in primitive, modern, and contemporary modes. It involves the collecting of collage materials and grounds, and the construction of collages. Using a wide range of media and groups, the student develops groups of collages centered around singular ideas. Critiques and reports. Prerequisite: 207. *Mr. J. Kuiper.*

Astronomy

Professors R. Griffioen (chairman, Department of Physics), H. Van Till

STUDENTS INTERESTED in graduate work in astronomy should major in physics and should plan their program with the chairman of the Physics Department. The sixteen-inch telescope in the observatory and portable telescopes are available for student use through the director of the observatory, Mr. Howard Van Till.

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

110 Planets, Stars, and Galaxies. F and S. core. A survey of the major astronomical objects, such as planets, stars, and galaxies; a study of their characteristics and their organization into a dynamic, structured universe; an investigation of the processes now occurring in the universe and the methods used to study them. The course includes a presentation of the evidence of the history and development of the universe, a description of cosmological models, and a discussion of possible Christian responses to them. *Mr. H. Van Till.*

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 112. *Mr. H. Van Till.*

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

Biology

Professors J. Beebe, A. Bratt, A. Gebben (chairman), B. Klooster, B. Ten Broek, P. Tigchelaar, G. Van Harn

Associate Professor H. Bouma, *U. Zylstra

Instructor R. Van Dragt

PREREQUISITE TO A PROGRAM of concentration in biology is a minimum average of C (2.0) in 131, 201, and 202 or equivalent courses approved by the department.

The program of concentration requires 131, 201, 202 (or 205–206), 222; at least one investigative course; three additional 300-level courses; and 395. If 205 and 206 are included in the program of concentration, credit toward a major will not be granted for 323 and 331 respectively. Required cognates include: (1) one year of physics (221–222 or 126 and 225) or one year of mathematics (131–132 or 161–162), (2) Chemistry 103–104 or 113–114, and (3) a second year of chemistry (253–254 or 301–302) or Geology 151–152. Computer science is recommended. Cognates should be chosen carefully in consultation with a biology department adviser. Students planning to do graduate work in cell-molecular biology, for example, are advised to complete both the mathematics and the physics cognates as well as organic chemistry. Those planning careers in environmental biology should include the geology cognate and a course in statistics.

Students entering a biology program of concentration in September, 1982 or later will be expected to meet the above requirements for a biology major. Students enrolled at Calvin College prior to September, 1982 have the option of graduating either under the requirements listed above or those stated in the program when they first enrolled.

The required number of courses for the secondary school teaching major is nine courses including 131, 201, 202, 222, 395, Teaching Investigations in Biology, plus one from 338, 340, 341, 346 or 352. Cognate requirements are similar to those stated for the biology program of concentration and will constitute a science studies minor. The required number of courses for the secondary school teaching minor is six courses including 131, 201, 202, 222, Teaching Investigations in Biology, plus one from 338, 340, 341, 346 or 352. Directed teaching in biology is available normally only during the spring semester. Juniors planning their directed teaching during their senior year must pass a screening test in biology not later than February 1 of their junior year. The adviser for biology teaching major and minor programs and for M.A.T. programs concentrating in biology is Mr. Bernard TenBroek. The adviser for elementary teacher science education programs is Mr. Vernon Ehlers of the Department of Physics.

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

from a third department. The department chairmen of the departments involved must approve each program.

Certain courses in the department have been reorganized and renumbered. Students should consult the department or registrar for equivalencies.

The core requirement in biology normally is met by 111 or 131. Sophomores and upperclassmen, or freshmen with exceptional backgrounds in high school science, may elect 215, which is recommended for elementary education programs, 216, or 217 for core credit. Biology 107 or 105–106 taken as a unit also meet the core requirement.

GENERAL COLLEGE COURSES

105 Introductory Human Anatomy and Physiology. F. An introduction to the study of human biology, including elements of anatomy, histology, and physiology. *Mr. P. Tigchelaar.*

106 Introductory Human Anatomy and Physiology. S. Continuation of 105. *Mr. P. Tigchelaar.*

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

111 Biological Science. F and S. An introduction to the principles and concepts of biology, and the history and philosophy of biological thought for the general college student. Ecology, evolution, gene and cell concepts are emphasized. Lectures and laboratories. Prerequisites: none, but Mathematics 100 and Physics 110 or equivalents are recommended. *Staff.*

215 Human Biology. F and S. A study of topics selected from human physiology, anatomy, genetics, development, ecology, and evolution. Emphasis is on current concepts in these topics, their historical development, and how they relate to health and other disciplines. The nature of biological science is studied through these topics. Lectures and laboratory. Prerequisites: Mathematics 100 and Physics 110 or equivalents. (Previously 115.) *Staff.*

216 Field Biology. F. 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. Prerequisite: Mathematics 100 and Physics 110 or equivalents. *Mr. A. Bratt.*

217 Plant Biology. F. An introduction to the principles and concepts of plant biology for the general college student. Seed plant

structure, function, development, and reproduction are emphasized. Topics include plant classification, diversity, and ecology. The historical development of selected current theories is presented. Lectures and laboratory. Prerequisites: Mathematics 100 and Physics 110 or equivalents. (Previously 117.) *Mr. J. Beebe.*

340S Field Botany. S. Taxonomy and ecology of vascular plants as components of natural communities. On site examination of plants in bogs, dunes, marshes, meadows, forests, and swamps. Assigned readings, fieldtrips, and laboratory. Offered as a summer course at AuSable Trails Institute of Environmental Studies located near Mancelona, Michigan. Prerequisite: 201, 217, or an introductory botany course. *Mr. A. Gebben.*

PROGRAM OF CONCENTRATION COURSES

Basic Courses

131 Cell Biology and Genetics. F. The structure and function of prokaryotic and eukaryotic cells are examined at the molecular, subcellular, and cellular levels. Fundamental concepts of genetics are studied including Mendelian genetics and some molecular genetics. The laboratory consists of basic techniques in cell and molecular biology for the study of cell structure and function. (Previously 121.) *Staff.*

201 Introduction to Botany. S. An introductory course in the structure and function of vascular plants and the diversity of plants. Topics include photosynthesis, movement of water and solutes, mineral nutrition, anatomy, and development of roots, stems, leaves, flowers, seeds, and diversity in the fungi, algae, bryophytes, ferns, fern allies, and seed plants. Prerequisite: 131. *Staff.* Not offered in 1982–83.

202 Introduction to Zoology. S. A study of the diversity, structure, and function of se-

lected animals. Organism and organ-tissue levels of organization are emphasized. Lectures and laboratory. Prerequisite: 131. *Staff*.

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

206 Mammalian Physiology. F. An introduction to the physiology of mammalian organisms. The function of the major systems is studied including circulation, respiration, excretion, muscle, nervous, and endocrine systems. The laboratory introduces basic physiological techniques. Prerequisites: 202 or 205, Chemistry 114, 253 or 301. *Staff*.

221 Genetics and Development. F. A study of the development of contemporary concepts of the gene and an introduction to the study of biological development, including both embryonic and post-embryonic systems. Offered for last time in 1982-83. Prerequisites: 121 and 122. *Staff*.

222 Ecology and Evolution. S. An introduction to the study of biological populations and communities and contemporary concepts of organic evolution. Prerequisites: 201 and 202 or 221; Chemistry 113 or 104. *Staff*.

Investigative Courses

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

351 Investigations in Genetics and Development.* S. Laboratory studies of genetic and developmental phenomena of selected organisms. Offered for last time in 1982-83. Prerequisite: 221. *Staff*.

352 Investigations in Ecology.* S. Laboratory and field studies of biological populations and communities. Prerequisites: 222; Chemistry 113 or 104. *Mr. A. Gebben, Mr. R. Van Dragt*.

353 Investigations in Cell Biology.* S. Laboratory studies with discussions of cellular, organelle, and molecular topics in cell biology including the techniques for preparing and observing materials for studies of structure and function. Prerequisites: 201

and 202 or 221; Chemistry 114, 253 or 301. *Staff*.

354 Investigations in Biology: Special Topics.* F and S. Not offered in 1982-83; available beginning in 1983-84. *Staff*.

Advanced Courses

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

323 Comparative Vertebrate Anatomy.* F. A study of the comparative anatomy of vertebrates. Credit cannot be applied toward a biology major for both 205 and 323. Prerequisite: 122 or 202. *Mr. P. Tigchelaar*.

324 Hematology.* S, half course. A study of the components of blood and the blood-forming tissues. Course topics include blood cell morphology, development, hemostasis, plasma composition, and methods of blood analysis. Prerequisites: 122, 202 or 206; Chemistry 114, 253 or 301. *Mr. H. Bouma*.

331 Comparative Animal Physiology.* S. A comparative study of basic functional mechanisms of animals. Credit cannot be applied toward a biology major for both 206 and 331. Prerequisites: 122, 202 or 205; Chemistry 114, 253 or 301. *Staff*.

332 Plant Physiology.* S. A study of plant function. Course topics include photosynthesis, photomorphogenesis, plant hormones, and the movement of water and solutes. Prerequisites: 201 or 221; Chemistry 114, 253 or 301. *Mr. J. Beebe*.

334 Immunology.* S, half course. An introduction to the study of immunology and serology. Course topics include innate, cellular, and humoral immunity, theories on the origin of antibody diversity, and the application of antigen-antibody specificity to serological assays. Prerequisites: 122, 202 or 206; Chemistry 114, 253 or 301. *Mr. H. Bouma*.

336 General Microbiology.* S. A study of the structure and function of microorganisms with emphasis on the bacteria. Prerequisites: 201, 202, 206, or 221; Chemistry 114, 253 or 301. *Miss B. Klooster*.

338 Animal Behavior. S. A study of the diversity, causation, ontogeny, and evolution of animal behavior. In addition to lectures the student will be given the opportunity in the laboratory to apply modern analysis techniques to a variety of behav-

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ioral systems. Three hours of lecture and three hours of laboratory a week. Prerequisites: 202 and 222 or permission of instructor. *Mr. R. Van Dragt.*

340 **The Diversity of Organisms.*** S. A systematic study of the classifications, morphological patterns, and evolution of plants and animals. Two laboratory sessions per week. Offered for last time in 1982-83. Prerequisite: 222. *Mr. A. Bratt, Mr. A. Gebben.*

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

346 **Plant Taxonomy.*** S. Identification, nomenclature, and classification of vascular plants. Lectures, laboratories, and field trips. Prerequisite: 222. *Mr. A. Gebben.*

Seminar and Research Courses

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

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

The following interdisciplinary course may be included in concentrations in this department:
210 **History of Science, Staff.**

GRADUATE COURSES

510 **Basic Ideas in Contemporary Biology.** A study of contemporary ideas in biology involving all of the organizational levels (the molecular, cellular, organ, organism, population, species, community, ecosystem). The laboratory work will emphasize the methods of inquiry of biology especially as they pertain to the concepts of biology which are being taught in the elementary and junior high schools. Prerequisites: at least three courses in biology including 111, 121 or 131. *Staff.*

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

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

W52 **Marine Biology.** An introduction to life in the oceans. Emphasis is on the biotic and abiotic factors which influence marine organisms. The ecosystem approach will be emphasized in examining the various marine environments. A research paper is required. Prerequisite: a course in biology. *Mr. A. Bratt.*

W53 **Health.** Without sufficient knowledge of the health-related sciences a person cannot adequately prevent disease or make full use of our health care system. This course attempts to educate the general college student in the basic facts of health. Some of the topics to be discussed are epidemiology and disease, drugs, tobacco and alcohol, accidents and health risks, nutrition, weight control, genetic diseases and counselling, ethics and the law, delivery of health care, and dilemmas in our health care system. This course will utilize outside speakers and films. Some outside reading will be assigned. Designed for the general college student. Prerequisite: one course in biology. *Mr. P. Tigchelaar.*

W54 **Introductory Genetics.** A course in genetics for BSN and Medical Technology students who have not had a previous course in genetics. A study of the development of contemporary concepts of the gene, especially as the concepts pertain to the human species. Transmission genetics, cytogenetics, and molecular genetics are considered. Special attention is given to the genetic bases of certain developmental and metabolic abnormalities most frequently observed in human subjects. Lectures in the morning sessions, with problem solving and laboratory work in the afternoon sessions (six afternoon sessions per student). Tests and a final exam will be used to evaluate performance. Prerequisite: 206; limited to students in the BSN and Med Tech programs who have not had 221 or its equivalent. *Mr. B. TenBroek.*

W55 **Human Nutrition.** The student investigates the relationship between nutrients and the growth and maintenance of the human body, as well as some of the psychological, social, and economic factors that influence food choices. Students evaluate their own food consumption patterns and those of other persons. Tests and written reports on assigned projects and outside reading. Prerequisite: a course in biology or permission of the instructor. *Miss B. Klooster.*

W56 Electron Microscopy Techniques. The student will concentrate on fixation, embedding, and ultramicrotome techniques for the preparation of specimens suitable for electron microscopy, proper use of the electron microscope, darkroom techniques essential to photoelectron micrography, and the interpretation of electron micrographs. Course work includes brief daily lectures, considerable hands-on experience, and an ultrastructure research project. Prerequisites: 222, Chemistry 253 or 301, and the written permission of the instructor. *Mr. H. Bouma.*

W57 Biological Photography. Within the context of illustrating biological materials, the student will learn the general techniques of black and white photography including camera and lighting techniques, films and film selection, film development, and print making. Picture-taking assignments initially deal with basic techniques but later center on particular problems for the biological illustrator, such as close-up and macrophotography of both dead and living materials, photomicroscopy and copying of line and continuous tone materials. Students will be evaluated throughout the course both by the instructor and by their peers. The final course project will be an

illustrated short report using techniques developed during the course. Darkroom equipment and facilities will be provided but the student must provide a 35mm single lens reflex camera with manual focus, shutter speed, and aperture control. Fee: about \$60. This course requires a full day's effort; therefore, the student should not schedule any other major time commitment during the interim. Prerequisite: written permission of the instructor. *Mr. R. Van Dragt.*

W58 Woody Plants. A study of woody plants from the perspective of the plant geographer, forester, and landscape architect. During classroom sessions, trees and shrubs will be studied as components of natural forests, as ornaments used in plantings and landscaping, and as timber and pulp sources for wood and paper. Laboratory work involves practice in tree and shrub identification through examination of woody plants in winter conditions and through study of herbarium specimens and study of the anatomical structure of different woods and the uses of different woods. This course is intended primarily for students concentrating in natural resource studies but is open to others. Prerequisite: 111, 217, or permission of the instructor. *Mr. A. Gebben.*

Chemistry

Professors R. Albers, R. Blankespoor, H. Broene, †R. De Kock, A. Leegwater, K. Piers (chairman), W. Van Doorne
Assistant Professor L. Mehne

PREREQUISITE to a concentration in chemistry is a minimum average of C (2.0) in 104 and in 201, 253, or 301.

The major program for students who do not plan to pursue graduate study in chemistry is 103, 104, 277, 278, 301, 302, 396, and 201, 303, or 310. 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, 277, 278, 301, 302, 309, 310, 396, and two from 303, 305, or 306; Mathematics 161, 162, 261, and 231 or 255; Physics 126 and 225 or 123, 124, and 225. A reading knowledge of German or French is strongly recommended. Computer Science 141 is recommended.

The nine-course chemistry major for teacher education students includes 103, 104, 201, 204 or 277, 253–254 or 301–302, 396, two courses in physics other than 110 or 112, and one chemistry course chosen from 278, 303, 305, 309, 310, or

an approved interim course. The teaching minor is 103, 104, 204, 253-254 or 301-302, and either 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 301-302; Physics 123, 124, 181, 182, 225, and 226; and two and a half courses in chemistry and/or physics which are approved by the Science Division Education Coordinator. Recommended courses include: Chemistry 201, 277, 278, Physics 381, and 382.

The adviser for elementary education programs in science is Mr. Vernon Ehlers of the Physics Department; the adviser for secondary education science concentrations is Mr. Paul Boonstra of the Mathematics Department. Students planning secondary majors or minors in chemistry should consult the chairman.

The six course minor concentration consists of 103, 104, 201, 253 or 301, 204 or 277, and one course from 254, 278, 302, 309, or an approved interim course.

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

The physical science core may be met by 110.

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

101 Chemistry for the Health Sciences. S. A one-semester survey of inorganic, organic, and biological chemistry as applied in the field of medicine. Laboratory. Prerequisite: one year of high school chemistry or permission of department. *Mr. H. Broene.*

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, theories of atomic structure and chemical bonding, the periodic law, kinetic theory, and chemical and physical equilibria. Laborato-

ry. Prerequisite: one year of high school chemistry or permission of the department. Honors recitation section. *Staff.*

104 General Chemistry. S, core. A continuation of 103, with emphasis on acid-base theory, reaction rates, ionic equilibria, redox reactions, electrochemistry, and nuclear chemistry. Laboratory. Prerequisite: 103 or the equivalent. *Staff.*

110 Chemical Science. S, physical science core. A general course designed for the non-science student which explores the role of chemistry and its resulting technologies in contemporary society. The basic ideas, principles, and methodologies of chemistry are discussed through an analysis of the stewardship of natural resources and the way these resources are used as synthetic materials and chemicals. Three lectures a week plus a laboratory. *Mr. A. Leegwater.*

113 Fundamentals of Chemistry. F. This course is intended for elementary education students and for those who need only one course in general chemistry to satisfy various paramedical professional requirements. The fundamental concepts of chemical science are presented together with selected topics in descriptive chemistry. Emphasis is

placed on the language of chemistry, the mole concept, chemical bonding, stoichiometry equilibrium processes, and periodicity. Laboratory. Prerequisite: one year of high school chemistry or permission of the department *Mr. H. Broene, Mr. L. Mehne.*

114 Introduction to Organic and Biochemistry. S, core. A study of the fundamental classes of organic compounds, their syntheses and reactions, followed by a survey of compounds and chemical changes occurring in living systems, of photosynthesis, metabolism, respiration, etc. Laboratory. Prerequisite: 113. *Mr. R. Blankespoor, Mr. K. Piers.*

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

204 Physical Chemistry for the Biological Sciences. S. A one semester survey of physical chemistry with some applications to biological systems. This course treats the same topics covered in 277 and 278, but a knowledge of calculus is not required. Prerequisite: 104. Not offered 1982-83.

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

254 Organo-Biochemistry. S. A continuation of 253, concluding with a study of the chemistry of metabolism and the application of quantitative methods to biochemical analyses. Laboratory. Prerequisite: 253. *Mr. R. Albers.*

277 Physical Chemistry. F. A study of the properties of gases and the kinetic molecular theory; introduction to thermodynamics and phase equilibria. Prerequisites: 201 or concurrent registration, Mathematics 162, and a high school or college physics course. *Mr. H. Broene.*

278 Physical Chemistry. S. A study of the kinetics of chemical processes and of electrochemistry, including the nature of electrolytic solutions. Electrochemistry is treated from a kinetic as well as a thermodynamic point of view. Laboratory consists of a study of experimental methods used in these areas and their application to analytical chemistry, including work in polarography, potentiometric titrations, and

amperometric titrations. Prerequisite: 201 and 277. *Mr. L. Mehne.*

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

302 Organic Chemistry. S. A continuation of 301. Laboratory. Prerequisite: 301. *Mr. R. Blankespoor, Mr. K. Piers.*

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

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

306 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: 301, Physics 225, and one course in mathematics beyond 162. Computer Science 141 is recommended. Not offered in 1982-83.

309 Spectroscopy and Instrumental Methods of Analysis.* S. A study of various forms of spectroscopy, including visible, ultraviolet, infrared, and NMR. This study will emphasize both the theoretical aspects and their application to analytical procedures. Prerequisite: 277. *Mr. L. Mehne.*

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

390 Independent Study.* F, I, S. Directed readings or projects. Admission by permis-

sion of the chairman and instructor under whom the work will be done. *Staff.*

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

396 Perspectives in Chemistry. S, quarter course. Reflections on the discipline of chemistry: its history, methodology, philosophy, curricular structure, key ideas, and concepts; its role as a central science in technology and society; the responsibilities of its practitioners in industry and in academic and research institutions. Prerequisite: junior or senior status in a chemistry program of concentration. *Mr. A. Leegwater.*

Interdisciplinary 210, History of Science, may be included in concentrations in this department.

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W51 An Introduction to Meteorology. Core. Meteorology may be defined as a science that deals with the atmosphere, weather, climate, and weather forecasting. The student will focus largely on the first three of these aspects of meteorology: weather conditions that make up climate, including temperature, solar radiation, clouds, precipitation, air pressure, and winds; natural factors that influence weather conditions, such as altitude, latitude, and proximity to bodies of water and mountains; descriptive elements of climate with respect to the earth as a

whole, North America, and the Great Lakes region. Finally, a small amount of time will be devoted to a look at man's impact on climate through pollution as well as through his attempts to control climate. Lecture, discussion, tests, and a visit to a local meteorologist. Prerequisite: high school or college course in chemistry. Satisfies physical science core. *Mr. R. Blankespoor.*

W52 Introductory Radiochemistry. A study of natural and induced radioactivity, including detection and measurement of radiation and the effects of radiation on man and his environment. Students will be encouraged to pursue their own specific interests within the broad general outlines of the subject. Laboratory includes some work with radioisotopes in chemical systems. In addition to morning class times, students should keep two afternoons free for laboratory work each week, either Monday and Wednesday or Tuesday and Thursday. Prerequisite: 103 or 113, or high school chemistry. Satisfies medical technology program and science studies group major. *Mr. H. Broene, Mr. L. Mehne.*

W54 Environmental Chemistry. A study of the chemistry of the atmosphere, natural waters, and, to a lesser extent, soil systems. In addition to studying the chemistry of these systems, the student will focus on methods of detection and measurement of several common air and water pollutants generated by our industrial and technological society. Lectures, films, and student reports or laboratory projects. Assigned problems and tests. Prerequisite: 253 or 301 or equivalent. Satisfies chemistry minor concentration. *Mr. K. Piers.*

Classical languages

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

THE DEPARTMENT OFFERS FOUR programs of concentration: in Classical Civilization, in Classical Languages, in the Greek language, and in the Latin language. The program in Classical Civilization or Classical Studies combines some study of one of the languages with a broad study in the culture and civilization of the Greek and Romans and of the later influence of that culture. The Classical Languages program is designed for graduate studies, the Greek language program is for preseminarians and for any others wishing to concentrate in Greek language and

literature, and the Latin language program is for those intending to teach the language at the secondary school level and for any others wishing to concentrate in Latin language and literature. Modified concentrations are available to other students.

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

The classical Civilization program consists of ten courses and one interim, all selected in consultation with a member of the department. The course requirements, besides the approved interim course, include: two courses, at the 200 level or above, in Greek language (one of which may be in New Testament Greek) or in Latin language; Classics 211, 221, 231; Philosophy 210; either Classics 311 and 312 or History 301 and 302; and two courses selected from: Art 231, History 201, History 302 (if not elected above), History 303, Philosophy 220, Philosophy 312, Political Science 305, Religion 302, Religion 312, Speech 325, Speech 317, or additional courses (at 200 level or above) in the selected language.

The Classical languages program requires fourteen courses and one interim, including six elementary or intermediate courses chosen from: Latin 201–202, Greek 101–102, 201–202, 203–204; six intermediate or advanced courses selected from: Latin 205–206, 301–302, 303–304; Greek 201–202, 203–204, 301–302; and two culture and civilization courses selected from: Classics 211, 221, 231, 311, 312, History 301. Reading competence in French and German is strongly recommended.

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

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

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

Students who have completed one year of high school Latin should enroll in Latin 101; two years in 201 (except that the unusually well qualified student, even with only two years of high school Latin, may with department approval enroll directly in Latin 205 and so meet the graduation requirement for language with one college course); those with three years, in either 202 or 205; more than three years, in 205 or 206. Those who have completed one year of college Latin should enroll in 201.

The core requirements in the fine arts may be met by Greek 202, 204, 301, 302, any Latin course numbered 202 through 304, Classics 221, 231, and designated interims. The "foreign culture" requirement of certain designated pre-profes-

sional programs may be met by Classics 211. Classics 231, Classical Mythology, may be part of the teaching minor in the Academic Study of Religions.

CLASSICS

211 Graeco-Roman Culture. S. A survey of Graeco-Roman culture as reflected in various art forms, but with the main emphasis upon works of literature which express distinctive features of the mind of the Greeks and Romans. Slides, films, and other illustrative materials will be used, and students will be expected to read 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, and can be a substitute for ancient history in the seminary entrance requirements. *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. F, core. A study of the major themes in Classical mythology via the literature and art of Greece and Rome. Major literary sources are read in translation and supplemented by slides of Greek and Roman mythological art. Attention is given to various interpretations of the myths and their influence on Western culture. Lectures, discussions, and written reports. *Mr. K. Bratt.*

311 Greek History.* F. The political, social, and cultural history of Ancient Greece from the Bronze Age to the beginnings of Christianity. Special attention is given to such problems as the emergence of the city-state, the civilization of the Periclean period, the great intellectual movements of the fourth century B.C., and the features of Hellenistic civilization which exerted a shaping influence on Roman society and early Christianity. This course may substitute for History 301 in any history concentration. Not offered 1982-83. *Mr. G. Harris.*

312 Roman History.* S. The history of Rome from the foundation of the city to A.D. 565, the death of Justinian. The emphasis is on the development of the constitution and its effect upon, and how in turn it was affected by, the expansion of Rome over the Mediterranean. Economic, social, and literary history are studied in their relation to the political. The decline of paganism and the rise of Christianity are viewed in their relation to each other. This course may substitute for History 301 in history concentrations. Not offered 1982-83.

GREEK

101 Elementary Greek. F. A beginning study of classical Greek using Crosby and Schaeffer, *An Introduction to Greek.* *Staff.*

102 Elementary Greek. S. Continuation of 101. Completion of the text and the reading of the 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. R. Otten.*

202 Intermediate Greek A. S, core. Readings in Homer's *Iliad*. Attention is given to the characteristics of Homer's world. Prerequisite: 201 or 203. *Mr. R. Otten.*

203 Intermediate Greek B. F. Readings in Herodotus. Special emphasis is put on gaining reading proficiency in Greek prose, with some attention to the characteristics of Herodotus as historian in relation to Thucydides. Prerequisite: 102. Not offered 1982-83. *Mr. R. Wevers.*

204 Intermediate Greek B. S, core. Readings in the Attic orators and Plato's *Apology*. Attention is given to certain matters of style. The readings are viewed in relation to, and as documentation for, the history of fourth-century Athens. Prerequisite: 203 or 201. Not offered 1982-83. *Mr. R. Wevers.*

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

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

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

302 **Greek Drama.*** S, core. A reading of selected Greek tragedies with attention given to their poetic and dramatic qualities. Those matters of Greek culture, literary tradition, and history which help to understand the plays are noted. Assigned outside reading in other Greek plays. Prerequisite: 301. Not offered 1982-83. *Mr. G. Harris.*

LATIN

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

102 **Elementary Latin.** S and I. 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. *Staff.*

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

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

206 **Late Latin Literature.** S, core. Readings in the prose and poetry of Latin literature from the Late Empire to the early Medieval period in both Christian and non-

Christian authors. Prerequisite: 202, 205, or permission of the instructor. *Mr. R. Otten.*

301 **Latin Epistolary Literature.** Core. Readings from the letters of Cicero and Pliny. The letters are read as social and political documentation for issues, movements, and conditions of the Late Republic and Early Empire and as commentaries on the careers and personalities of their authors. Prerequisite: 205 or 206. Offered in alternate years. Not offered 1982-83. *Mr. R. Wevers.*

302 **Latin Philosophical Literature.** Core. Texts selected from such authors as Lucretius, Cicero, Seneca, Lactantius, and St. Augustine to illustrate the Latin contribution to Western culture, particularly in ethical and social thought. Prerequisite: 205 or 206. Offered in alternate years. Not offered 1982-83. *Mr. R. Otten.*

303 **Latin Epic and Lyric Poetry.** S, core. Selected readings from such authors as Vergil, Catullus, Horace, and from the elegiac poets, with some attention to metrics and the Greek heritage in epic and lyric. Prerequisite: 205 or 206. Offered in alternate years. *Mr. K. Bratt.*

304 **Latin Historical Literature.** S, core. Intensive reading in the major Roman historians of the Late Republic and Early Empire. Emphasis is placed upon the proper interpretation of these writers as sources for our understanding of the political movements of the period. Collateral reading and reports. Prerequisite: 205 or 206. Offered in alternate years. *Mr. G. Harris.*

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CLASSICS

W10 **Greek Drama in Translation.** A study of selected works by the earliest playwrights of the West: Aeschylus, Sophocles, Euripides, and Aristophanes. Lectures and discussions will address such questions as the origins of tragedy and comedy, the essential features of each art form, the distinctive characteristics of each poet's work, the cultural context in which the plays were first presented, the production of ancient drama, and the impact of Greek theater on the dramatic literature of the West. All assigned readings are in English, and no prior knowledge of classical civilization is required. Reports, slides, films, and examination. Fine arts core. *Mr. K. Bratt.*

W50 Review Greek. This course is intended for students who have completed Greek 101 and requires no assignments beyond what can be done during class meetings. An afternoon session will be available for students whose regular interim class meets in the morning, and a morning session for those with afternoon classes. Non-credit. Prerequisite: successful completion of Greek 101. *Mr. R. Wevers.*

LATN 102 This is the usual Latin 102 offered during the interim. Students completing this course may proceed with 202 in the second semester provided they have achieved a minimum grade of B- or have the recommendation of the instructor. Does not satisfy the interim course requirements for graduation. *Mr. R. Otten or Mr. R. Wevers.*

Computer science

*Professors S. Leestma, *L. Nyhoff, C. Sinke (chairman, Department of Mathematics and Computer Science)*

Associate Professor D. Brink

Assistant Professor M. Stob

Instructors M. Bultje, C. Smith

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

The various 100-level courses have been reorganized and renumbered. Students should consult the department or the registrar for equivalencies.

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

100 Introduction to Computing. 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.*

131 Introduction to Computing for Business. 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 COBOL is emphasized. Applications are taken from business data processing. Prerequisite: two years of high school mathematics. *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. Prerequisite: two years of high school algebra, or permission of instructor. *Staff.*

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

243 **Computer Organization and Assembly Language Programming.** F and S. A study of the structure and organization of the basic components of a computer system. Topics covered include binary representation of data, arithmetic and logical operations, principal machine instruction types and their formats, addressing schemes, and assembly language programming. Prerequisites: a programming course and Mathematics 132 or 161. *Mr. Leestma.*

251 **Discrete Structures.** F. An introduction to various discrete mathematical structures. Topics include sets and binary relations, graphs, algebraic structures, lattices, and Boolean algebras. Combinatorics, algorithms, and abstract computers (Turing machines) are also considered. Also listed as Mathematics 251. Prerequisites: a programming course and Mathematics 132 or 161. *Mr. M. Stob.*

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

285 **Introduction to Digital Electronics.** F. An introduction to digital electronics for students with little or no background in physics or electronics. Topics include: basic circuit elements and laboratory instruments, discrete circuits for digital functions, Boolean algebra for circuit design, logic circuit analysis and design, and integrated circuits. Not intended for students who have taken or

plan to take Physics 380 or Engineering 208 or 308. Laboratory. Also listed as Physics 285. Prerequisite: Mathematics 132 or 161. *Mr. J. Van Zytveld.*

335 **Numerical Analysis.** S. Analysis of errors in numerical methods, real roots of equations, approximations using polynomials, calculus of finite differences, numerical methods for differentiation and integration, applications to differential equations, applications to matrix algebra, inversion of matrices, characteristic values. Also listed as Mathematics 335. Prerequisites: a programming course and Mathematics 255 or permission of instructor. *Staff.*

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

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

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

392 **Perspectives on Computing.** S, half course. A senior-level seminar course. Discussion of topics in computer science not considered in other courses. Special emphasis on computer applications, social implications, ethical and legal issues, future social impact. Prerequisite: senior status in computer science program of concentration. *Staff.*

GRADUATE COURSES

511 **Computing and Computer Science for Teachers.** This course includes a discussion of computer organization and operation and the applications of computing to science and mathematics. Some of the topics to be considered are: nondecimal numeration systems, especially binary, octal, and hexadecimal; digital representation of data; Boolean algebra and its application to design of arithmetic units; machine language and assembly language programming; computer sys-

tem software. This will provide a basis for an introduction to computer programming using the BASIC language, including flow-charting and development of algorithms. Programs will be written for solving problems in areas such as number theory, matrix algebra, and numerical calculus. Special attention will be given to applications in secondary education. Prerequisite: some knowledge of calculus and linear algebra. *Staff.*

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W53 Computer Graphics. This course includes almost any non-alphanumeric display of information which is generated by the computer. This course will focus on time-varying graphic representations of three-dimensional rigid body dynamics. Coordinate transformations are the crucial tools used to derive the appropriate al-

gorithms. A primary objective in this course is to become acquainted with the *quaternion* and to study its properties. The quaternion, a hyper-complex number invented by Hamilton in 1843, is becoming more widely discussed and applied. Quaternion algorithms are often substantially more efficient than those derived using conventional matrix methods. Another objective in this course is to provide an environment for exercising individual creativity in applications. Each participant is expected to share his particular interest with the class and to help others with problems. A wide variety of mathematical models, algorithms for specific applications, microprocessors, etc., will be derived and/or discussed and demonstrated in class. Prerequisites: three semesters of calculus and a course unit of computer science. *Mr. J. Kuipers.*

Dutch

Professor W. Lagerwey, Queen Juliana Chair of Language and Culture of the Netherlands (program coordinator)

Associate Professors M. Bakker, C. Hegewald (chairman, Department of Germanic Languages)

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

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

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

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

202 Intermediate Dutch. S. Continuation of 201. *Staff.*

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

204 Intermediate Dutch. S. A continuation of 203. *Staff.*

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. *Mr. W. Lagerwey.*

306 Dutch Classics.* Core. A continuation of 305. *Mr. W. Lagerwey.*

307 Readings in Dutch Church History.* F. A study in the Dutch language of source documents pertaining to the history of the Reformed churches in the Netherlands during the period 1450-1700. *Mr. W. Lagerwey.*

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

309 Netherlands Civilization.* A study conducted in the English language of sever-

al important aspects of Netherlandic civilization: language, literature, history, religion, art, architecture, social structure, and education. Readings in English. Students reading in Dutch may apply this course to Dutch concentration. *Mr. W. Lagerwey.*

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

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W10 Discovering Your Roots in the Netherlands. An introduction to the civilization of the Netherlands and Belgium. Students will live with Dutch and Belgian families in several cities which are cultural centers, giving the students an opportunity to develop listening and speaking competence in the Dutch language as well as an acquaintance with significant aspects of

Dutch and Flemish life and culture, both historical and contemporary. A one-week tour through Belgium to visit the major cultural centers such as Antwerp, Bruges, Ghent, Louvain, and Brussels, and a tour of the Netherlands of approximately one week will enable the student to visit the principal cities of the provinces from Maastricht to Leeuwarden to Amsterdam. They will also be introduced to the important churches in the history of the Secession out of which the Christian Reformed Church developed. Upon completion of the interim program, students will have approximately one week for personal travel. Prerequisite: one and a half years of Dutch or equivalent. Cost of approximately \$1,250. Off-campus. *Mr. M. Bakker.*

IDIS W11 Introduction to Frisian. *Mr. H. Baron.*

Economics and business

Professors G. Monsma, D. Pruis

Associate Professors E. Beversluis, †E. Dykema, K. Kuipers (chairman), L. De Lange, J. Tiemstra.

Assistant Professors J. Dodge, D. Ebels, D. House, R. Slager, E. Van Der Heide

Instructors D. Rietberg, S. Roels

PRINCIPLES OF ECONOMICS (151) must be completed with a minimum grade of C (2.0) for admission to any of the departmental programs of concentration. An appropriate major concentration must be selected from the four listed below: the economics concentration provides thorough coverage of economic theory and analysis, the business concentration provides a thorough grounding for business administration, an economics-mathematics concentration joins the study of mathematics and economics and business, and a social science group concentration involves economics and business and another social science. Both of the first two concentrations are appropriate for teacher certification.

Economics concentration requirements are 151, 207, 321, 322, six other economics or business courses (five for teacher education) including at least four (three for teacher education) from 331-342 or 395, and the mathematics cognate.

Business concentration requirements are 151, 207, 212, 313, 316, 318, 321, 322, one course from 331-339 and 395 (and one elective not required for teacher certification), and the mathematics cognate. An accounting emphasis may be added to this concentration by electing six courses from 209, 307, 308, 309, 310, 311, and 312.

A twelve course interdisciplinary group concentration in economics or business and mathematics is 151, two courses from 207, 321, 322, three others chosen with the departmental adviser, and Mathematics 161, 162, 255, and 261 plus two additional 300-level mathematics courses. Economics 207 is recommended for

those interested in business and both 321 and 322 for those interested in economic theory. Mathematics 343 and 344 are also recommended.

The social science or business group concentration requirements are 151, 207, 321 or 322, four other courses in the department and four courses in either history, political science, psychology, or sociology in a coordinated program approved by the department.

One approved interim course may be included in any program of concentration.

The minimum mathematics requirements are 131 and 132 (previously, 205 and 206). In view of the importance of mathematics to the study of economic theory and to economic and business analysis, 161, 162, 255, 261, 343, and 344 are recommended.

An economics minor requires 151, 321, 322, and three additional courses from 207 and 331-342. A business minor requires 151, 207, 313, and three others from 212, 309, 316, 318, 321, 322. An interim course may be substituted for an elective course with the adviser's approval.

The chairman will assist students working out appropriate teacher education minors. The minimum requirements are 151, 321 or 322, and four additional courses, which may include two approved interims.

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

BUSINESS

207 Introduction to Financial Accounting. F. An introduction to accounting with emphasis on principles of asset valuation and income determination. Prerequisite: completion or concurrent registration in 151. *Mr. L. De Lange, Mr. D. Pruis, Mr. D. Rietberg, Mr. R. Slager.*

209 Income Tax. 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: 207. *Mr. L. De Lange.*

212 Financial and Managerial Accounting. S. A continuation of 207 emphasizing consolidated financial statements. The course provides an introduction to cost accounting, budgeting, the development of controls, and the use of financial analysis for managerial decision making. Prerequisite: 207. *Mr. L. De Lange, Mr. D. Pruis, Mr. R. Slager.*

307 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: 212. *Mr. K. Kuipers.*

308 Intermediate Accounting II.* S. Continuation of 307. 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. *Mr. K. Kuipers.*

309 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.*

310 Advanced Accounting.* F. Preparation of consolidated financial statements, accounting for partnerships, and accounting for installment and consignment sales. Introduction to governmental or fund accounting. Prerequisite: completion of or concurrent registration in 307. *Mr. D. Pruis.*

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 307. *Mr. K. Kuipers.*

312 Cost Accounting.* S. Principles and methods of accounting for manufacturing and operating costs, with emphasis on analysis and reporting to management to facilitate planning, control, and decision-making. Prerequisite: 212. *Mr. J. Mellema.*

313 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. Prerequisite: 151. Not open to freshmen. *Mr. D. House, Mrs. S. Roels.*

314 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: 313 or permission of the instructor. *Mr. D. House.*

316 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. Prerequisite: 207. *Mr. J. Mellema, Mr. D. Rietberg.*

317 Financial Instruments and Markets.* S. An extension of 316 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: 316. *Mr. D. Rietberg.*

318 Marketing. F and S. A study of the principles and problems involved in the optimal administration of the marketing function in the firm, including production and promotional policy, price determination, and distribution channels. Prerequisite: 151. Not open to freshmen. *Mr. D. House, Mr. D. Rietberg, Mrs. S. Roels.*

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 and to prepare them for further work in economics, history, and government. *Mr. E. Beversluis, Mr. J. Dodge, Mr. D. Ebels, Mr. G. Monsma, Mr. J. Tiemstra, Mr. E. Van Der Heide.*

321 Intermediate Macroeconomics.* F and 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. Prerequisite: 151. *Mr. J. Dodge, Mr. D. Ebels.*

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

331 Money and Banking.* F. A study of the principles of money, banking, and credit with emphasis on monetary theory and policy and their role in domestic and international economics. Prerequisite: 151. *Mr. J. Dodge.*

232 Environmental Economics and Public Policy. An introduction to the theory and practices 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 permission of instructor. *Mr. J. Dodge.*

334 Industrial Markets and Public Control.* S. A study of the structure, control, and market behavior of American industry, and the public policies for the control of economic power. Prerequisite: 151. *Mr. J. Tiemstra.*

335 Labor Economics.* S. A study of labor markets and their relationship to the economy as a whole, with an emphasis on wage theory, the impact of trade unions, unemployment, income distribution, human capital formation, labor force participation, and public policies concerning such topics. Prerequisite: 151. *Mr. G. Monsma.*

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. Not offered 1982-83.

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. *Mr. E. Van Der Heide.*

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. *Mr. J. Tiemstra.*

339 Public Finance.* F. 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. *Mr. D. Ebels.*

342 History of Economic Thought.* S. An examination of the development of economic ideas with an emphasis on the emergence of main historical themes, issues, and controversies. Prerequisite: 151 or permission of the instructor. *Mr. E. Dykema.*

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

395 Economics Seminar.* A concentrated study of one or more significant problems in economics, designed primarily for majors planning to pursue graduate studies. Emphasis on oral and written reports and on extensive reading in current economic journals. Prerequisites: senior rank and consent of the instructor. Not offered 1982-83.

396 Business Policy Seminar.* S. An integrative study of business goals, strategies, and administration. Case studies, readings, reports, and a management simulation. Open to senior business economics majors with the consent of the instructor. *Mr. D. Pruis.*

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W10 An Introduction to Business for Non-Business Majors. This course is designed for the non-business major, particularly seniors looking for full-time employment, to provide them with a general

understanding and appreciation of the basic tools and responsibilities of business from a Christian perspective. Through lecture, case studies, outside reading, and small discussion groups, students will study such topics as managerial accounting, finance, marketing, personnel administration, and general management. Not open to business and economics majors or prospective majors. *Mr. D. Rietberg.*

W11 Worker Participation in Management. In response to the competitive challenge from Japan and their own recent slow (or even negative) productivity growth, many North American firms are experimenting with new types of relationships between managers and other workers—more worker participation in decision-making at various levels, participatory programs on the shop-floor to workers' representation on corporate boards, such as Chrysler and Pan Am. Students will examine and evaluate old and new structures for worker participation, both American and European, and visit nearby firms having such structures, or listen to representatives from such firms. A paper analyzing and evaluating a particular type or example of a worker participation structure. *Mr. G. Monsma.*

W50 Finance and Business in New York. Students will examine the role and evaluate the performance of financial institutions and markets in the financial system. After preparatory study on campus, a week will be spent in New York visiting financial institutions and markets, including such institutions as stock exchanges, a Federal Reserve Bank, New York Society of Financial Analysts, an insurance company or mutual fund intermediaries, and meeting financial executives. A portion of the time in New York can be arranged to accommodate special interests in accounting, management, or marketing. Recent innovations and selected investment instruments will be analyzed to determine how prices are set and how balance is achieved between risk and return. Initial information and planning meeting, September 27. Estimated fees: \$400 for travel and lodging in New York. Prerequisites: 151 and an instructor's permission. Off-campus. *Mr. K. Kuipers, Mr. D. Pruis.*

W51 An Economic History of the United States. A review of the growth and development of the economic system of the United States since colonial times. Students will study the economic forces which helped to shape and explain the American Revolu-

tion, The Constitution of the United States, the Civil War, and the Great Depression. By emphasizing the historical development of the money and banking system, agriculture, manufacturing and commerce, students will gain a greater understanding of the basic economic factors—production, distribution, exchange, and consumption—their institutionalization and maturation. Assigned readings, films, field trips to museums, a paper, and final examination. Prerequisite: 151 or permission of the instructor. *Mr. E. Van Der Heide.*

W52 Business Taxation. A study of a variety of federal, state, and local, payroll, excise, property, franchise, income, and other taxes (other than Federal income tax, which is covered in 209) applicable to business firms and non-profit organizations. Provisions of each tax will be studied, with applications to a variety of situations in problem assignments. The course includes an evaluation of the provisions of the taxes studied, as well as the tax impact on different types of firms within a state and selected interstate comparisons. Prerequisite: 207. *Mr. L. De Lange.*

W53 Econometrics and Forecasting. A survey of forecasting methods with emphasis on the design and use of computerized econometric models. Financial market, product market, macroeconomic, and world models will be evaluated. Students will be introduced to some basic econometric concepts which they will use to develop their own forecasts. Prior computer experience is

helpful, but not required. Prerequisites: 321 or 322, and Math 131 or 206. *Mr. D. Ebels.*

W55 Government Regulation of Business. A number of issues have sparked public debate in the last few years, particularly prices and investment in energy production, and the deregulation of the transportation and communication industries. While reviewing the histories of some regulatory agencies and regulated industries, students will examine these issues as well as the "new social regulation" and evaluate the total social benefits and costs of various forms of regulation, especially environmental quality and occupational safety and health. Prerequisite: 151. *Mr. J. Tiemstra.*

W56 Field Study in Management. This course is designed for senior business majors who will observe, listen and ask questions of management-in-action in large and small, profit and non-profit, product and service, civilian and government organizations in the Grand Rapids area. Daily reports on the visits as well as on the reading assignments, periodic class discussion, and a final report. Text: Peter Drucker, *People and Performance.* *Mr. D. House.*

IDIS W21 **Women and Changing Work Roles,** *Mrs. S. Roels.*

IDIS W50 **Background to Blitzkrieg: Social and Economic Aspects of World War II in Europe,** *Mr. J. Dodge.*

IDIS W55 **Economic Justice,** *Mr. E. Beversluis.*

Education

*Professors P. De Boer, C. Kass, P. Lucasse (chairman), C. Mulder, *D. Oppewal, D. Westra, J. Wiersma*

Associate Professors K. Blok, B. Bosma, T. Hoeksema, L. Stegink
Assistant Professor W. Hendricks

THE VARIOUS TEACHER EDUCATION PROGRAMS are described in detail on pages 48–53. Prospective elementary teachers should consult Mr. William Hendricks, coordinator of elementary education. Those interested in secondary education should initially consult the teacher education adviser of the department in which they expect to major. Mr. Leroy Stegink is the coordinator of secondary education. Students intending to enter special education should consult either Mr. Thomas Hoeksema, coordinator of special education: mentally impaired, or Miss Corrine Kass, coordinator of special education: learning disabilities.

The elementary teacher education program requires: 301, 303, 304, 305, 322, 324, 325, 345, 355. The secondary teacher education program requires seven courses: 301, 303, 304, 307, 308, 346 and 356. Students in special education must also complete the elementary education requirements.

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

303 Introduction to Teaching.* F and S. An analysis of the teaching-learning process in the classroom. Includes observation and participation in school activities and a laboratory experience to develop competence in the classroom use of audio-visual equipment. Prerequisite: concurrent registration in 301. *Staff.*

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

305 Elementary Teaching Methods.* F and S. A study of the methods of teaching religion, language arts, social studies, science studies, and mathematics as taught in the elementary school. Prerequisite: 303. *Staff.*

307 Content Area Reading: Process and Skills. F, half course. A study of the reading process as it relates to the secondary school curriculum; an analysis of the factors which enhance or impede comprehension of content area reading materials; a presentation of reading and study skills common to all content areas; an analysis of reading and study skills required in specific content areas. *Mrs. K. Blok.*

308 Content Area Reading: Methods of Teaching. 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 sec-

ondary 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. *Mrs. K. Blok.*

322 Introduction to Methods of Teaching Reading: Elementary.* F and S. A study of the nature of the reading process; an introduction to the various approaches to the teaching of reading with an emphasis on the basal approach; a presentation of instructional strategies appropriate to a developmental reading program; an analysis of the organizational and management of a classroom reading program. *Mrs. B. Bosma, Mrs. K. Blok.*

324 Methods of Teaching Reading: Diagnosis and Prescription.* F and S, half course. A study of the various kinds of problems children encounter when learning to read; an analysis of the strengths and weaknesses of common diagnostic instruments; an introduction to testing terminology and interpretation of test results; and a presentation of approaches, techniques, and devices for differentiating instruction to fit individual needs. A field experience is included. Prerequisite: 322. *Mrs. B. Bosma, Mrs. K. Blok.*

325 Reading in the Elementary School Curriculum.* F and S, half course. A study of reading as a language art and its relationship to the various subjects in the elementary school. Prerequisite: 322. *Mrs. B. Bosma, Mrs. K. Blok.*

345 Directed Teaching: Elementary.* F and S, one to three course units. Students participate in full-time supervised practice teaching. Those in regular elementary education programs teach in two different schools and may, if their certification program requires it, have one experience in their major field. Prerequisites: good standing in the teacher education program and appropriate recommendations. *Staff.*

346 Directed Teaching: Secondary.* F and S, one to three course units. Students par-

ticipate 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. Prerequisites: good standing in the teacher education program and appropriate recommendations. Offered in the fall semester in history, mathematics, and physical education; in the spring semester in English, French, German, history, music, physical education, religion, science, and Spanish. *Staff.*

355 Seminar in Elementary Teaching Methods.* F and S. A seminar taught in conjunction with 345 involving the practical problems of pedagogy in the elementary classroom, including those related to the student's directed teaching experience, as well as elementary teaching methods initiated in 305. Large and small discussion groups led by the college supervisors of directed teaching. *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. S. An orientation to all disability areas included within the field of special education. The course acquaints the students with the basic information and the specialized vocabulary needed for dealing with handicapping conditions. Consideration of the major issues in special education as well as 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.* F. This course is designed to acquaint students with the basic terminology and theory of assessing specific learning problems. Skill will be developed in the selection, administration, and interpretation of formal and informal, standardized and non-standardized assessment devices for the purpose of determining educational prescriptions. Prerequisite: 216. *Mr. T. Hoeksema.*

323 Teaching of Reading: Methods, Diagnosis, and Prescription.* F. A study of the nature of reading as a cognitive and developmental process, the basic skills needed in learning to read, and various approaches to the teaching of reading. This course also includes a study of the various kinds of problems which children exhibit when learning to read, the use of common diagnostic tests with an emphasis on the strengths and weaknesses of each, and a clinical experience involving both the diagnosis of reading problems and the use of appropriate corrective measures. Prerequisites: 301, 303, 310. *Mrs. B. Bosma.*

330 Curriculum and Instruction: Mentally Impaired.* F and S. 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; 305 is recommended. *Mr. T. Hoeksema.*

347 Directed Teaching: Mentally Impaired.* S. Two course units. *Mr. T. Hoeksema.*

357 Directed Teaching Seminar: Mentally Impaired.* One half course unit. *Mr. T. Hoeksema.*

GRADUATE COURSES

510 History of American Education. A study of the American school systems in their historical setting from colonial times to the present. Special attention is given to the ways in which social and intellectual movements affect educational theory and practice. *Mr. P. De Boer.*

512 Theories of Schooling. This course examines psychological, socio-psychological, and educational concepts relevant to an

analysis and evaluation of the schooling process. Intellectual skills required for the construction of micro-theory and the interpretation and implementation of research will also be stressed. *Mr. J. Wiersma.*

513 Psychology and the Teaching of Reading. A study of the dynamics of learning to read, including research from child psychology, psycholinguistics, educational psychology, and learning theory. Readings, lectures, and analysis of reading practices and materials from the psychological point of view will be used to improve reading instruction in all grades. Prerequisites: at least one course in reading and one in psychology. *Miss C. Kass.*

515 Moral Education. The study of a number of theories of moral education, some of which stress the cognitive approach and others the affective. Kohlberg, Rath, and Simon theories are studied. Individual projects and construction of teaching units. *Mr. D. Oppewal.*

530 Education of the Gifted. This course focuses on several manifestations of intellectual, social, and artistic giftedness. Several aspects of the educational and guidance process are studied, such as identification of talent and giftedness, curriculum considerations, teaching methods, role models, and guidance procedures. Prerequisite: graduate standing and teaching experience. *Staff.*

531 Teaching Children with Learning Problems. An orientation to the variety of handicapping conditions which affect school-age children. This course for regular classroom teachers acquaints them with the basic information and specialized vocabulary needed for dealing with handicapping conditions in the typical classroom. It will include consideration of major issues and contemporary practices in the education of exceptional learners. *Miss C. Kass.*

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 structure, organization, administration, and management of the school, primarily the elementary school, including the role of the teacher-principal. Includes the development of professional leadership and supervisory practices. *Mr. C. Mulder.*

535 The School as a Social Organization. A study of the religious premises and theoretical bases of organizations, with special emphasis on school systems. Particular attention is paid to the teacher functioning in a school organization. A major goal of the course is an attempt to formulate a Reformed Christian theory of organizations. *Mr. L. Stegink.*

536 The Young Child in a Preschool Setting. A review and critique of the basic theories of child development. Observation and intensive analysis of the behavior of a particular child in a preschool setting as related to the major theories. Prerequisite: Psychology 204. *Miss D. Westra.*

537 Curriculum for Early Childhood Education. An evaluation of the major approaches to building a curriculum for early childhood education (up to age eight), the underlying assumptions of each approach, and the effects of each approach on the children. Prerequisites: one course in education and one in psychology. *Miss D. Westra.*

538 Staff Supervision and Development. An examination of the supervisory responsibilities and functions of school administrators with an emphasis on staff evaluation and staff development. Units of study include: a survey of the research on teacher effectiveness; models of supervision; peer, student, supervisor, and self-evaluation; models and methods for analyzing teaching; pre- and post-conferences; and the creation and implementation of staff development programs. Prerequisite: 534 or permission of the instructor. *Mr. C. Mulder.*

540 Reading Problems in the Elementary Classroom. This course is designed to enable experienced elementary teachers to

work with problem readers in their own classrooms. The course includes: a study of the various kinds of reading problems encountered at the elementary level and their causes; the use of the most common formal and informal diagnostic tests with an emphasis on the strengths and weaknesses of each; a critical introduction to the reading materials available for the classroom; and a field experience involving both the diagnosis of reading problems and the use of appropriate corrective measures. Prerequisite: 322 or the permission of the instructor. *Mrs. K. Blok, Mrs. B. Bosma.*

541 Reading Problems in the Secondary Classroom. Half or whole course. This course is designed to help secondary-level teachers recognize the reading problems they are most likely to find in their classrooms and to understand what is needed to correct the problems—including the development of separate reading programs. The course includes: a study of the nature of the reading process; a survey of basic reading and study skills; an examination of the reading problems students face when they read typical high school textbooks; a consideration of alternative ways of working with problem readers; a survey of the reading and study skills materials that are appropriate at this level; the use of the most common formal and informal diagnostic tests with an emphasis on the strengths and weaknesses of each; and the development of a model program for use in a particular high school class. Prerequisite: 307, 322, a year's teaching experience on the secondary level, or the permission of the instructor. *Mrs. K. Blok, Mrs. B. Bosma.*

542 Diagnosis and Remediation of Reading Disabilities. An advanced course for the training of reading specialists who may serve as consultants to classroom teachers and may work individually with severely disabled readers. The course includes a discussion of reading theory, a study of the specialized and general testing tools emphasizing validity and interpretation, the development of prescriptive programs for remediating the problems identified, and the consideration of how to work with regular classroom teachers to implement such programs in a normal classroom. A field experience with a severely disabled reader will involve the development and administration of an appropriate battery of tests, the designing of a remedial program, and creation of an evaluation procedure. Prerequisite:

513, 540, 541, or permission of the instructor. *Mrs. B. Bosma, Miss C. Kass.*

543 Teaching Reading through Literature. An investigation of the development of reading skills in elementary school children through the use of literary materials. The course includes an analysis of literal and critical comprehension skills, the development of teaching strategies appropriate to the reading levels of pupils, and the building of a reading program that fosters pleasure in reading and promotes reading of library materials. *Mrs. B. Bosma.*

548 Directed Teaching: Learning Disabilities. F and S. Half to two course units. *Miss C. Kass.*

550 Theories of Learning Disabilities. F. As an introduction to the field, this course seeks to acquaint students with the major theoretical models of learning disabilities and with the academic, social, and motor characteristics of learning disabled children. Approaches to the education of learning disabled children which have been based on the theoretical models examined are also studied. Prerequisite: 216. *Miss C. Kass.*

551 Diagnosis and Prescription: Learning Disabilities. F. A study of the basic terminology and ethical considerations involved in assessing learning disabilities. Skills are developed in the selection, administration, and interpretation of appropriate psychological and educational tests for the purpose of determining educational prescriptions. Prerequisite: 550. *Miss C. Kass.*

580 Curriculum Theory and Development. A study of conflicting and complementary curriculum theories for elementary and secondary schools and how these theories ought to be conceived and practiced. A project in designing curriculum is required at the appropriate level and in the student's area of concentration. *Staff.*

581 Educational Philosophy and Curriculum Decisions. The course examines the philosophical views of selected thinkers on curriculum. The course focuses on the differences among the best of secular and of Christian curriculum theories, with special emphasis on the way curriculum theory is related to the religious vision and the major learning goals of education. Prerequisite: at least one course in philosophy or philosophy of education. *Mr. D. Oppewal.*

582 Curriculum and Instruction: Learning Disabilities. F and S. A study of the curricula, methods, and materials appropriate to the education of learning-disabled children. Attention is given to the problems of organizing classes, adapting learning environments, making curricular decisions, and selecting materials and instructional methods. Special emphasis is on the development of language. A field experience with learning disabled students is an integral part of this course. Prerequisite: 550. *Miss C. Kass.*

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

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

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W10 Teaching Reading Comprehension. A study of reading comprehension development encompassing primary-intermediate-secondary instructional levels. The student will read current research and theoretical literature in psycholinguistics and cognitive psychology pertaining to reading comprehension and prepare model lessons. Instructional strategies in teaching reading comprehension will be demonstrated and evaluated. Classroom observations. Texts: P. David Pearson, *Teaching Reading Comprehension*; *Reading Research Quarterly*, Vol. XIV, No. 4. *Mrs. B. Bosma.*

W11 Writing to Grow. In this course, elementary teachers will explore ways to nurture the creative expression of children and to stimulate them to write. Students will plan and teach lessons in local schools, watch films and illustrated presentations, participate in discussion, examine their own writing, and study theories of writing. Students will be required to report on readings, and construct a writing center appropriate to classroom use. *Mrs. P. Oostenink.*

W12 In Praise of Diversity: A Study of Multicultural Education. Students will examine the cultural characteristics and contributions of the native American, Hispanic, Vietnamese, and Black student in the elementary and middle schools of Grand Rapids. One morning a week will be devoted to theoretical study, one for group visits to community agencies concerned,

and three to teacher-aiding in classrooms. Research paper on a selected ethnic group, an analytical log of classroom experience, one teaching aid, and one bulletin board for a multicultural classroom. A bibliography of appropriate readings will be available in December. *Mr. W. Hendricks, Mr. C. Mulder.*

W13 The Adolescent and the High School. Because adolescence tends to be coincidental with high school years, teaching must be accommodated to the developing process of maturing. In this course potential teachers will learn how. They will examine the nature of adolescence and the way it produces a subculture of its own and the effect both have on the curriculum and methods of teaching that are appropriate in high school. Readings, lecture, discussion, and projects using local high schools as a resource. Prerequisite: interest in secondary education. *Mr. L. Stegink.*

W14 The Child: Growing Up Like Topsy. A study of the young child—the influences on growth and development, the problems surrounding child care, present-day answers to yesterday's questions. Each student will select an area for special study, such as TV for children, day care centers, preschools, foster children, child abuse, working mothers, the single parent, play, sexism in children's books, and others. Readings, discussions, preschool observations, films, and visit with personnel from agencies serving children. *Miss D. Westra.*

W50 Building Integrated Teaching Units. This course is designed to help elementary teacher education students create and teach integrated units during their directed teaching seminar. In addition to assigned reading, lectures, discussion and extensive use of the Curriculum Center, students will be expected to develop at least one teaching unit, which will be the main basis for the course grade. One of the assigned texts is *Shaping School Curriculum: A Biblical Approach* by Steensma and Van Brummelen. Prerequisites: 301-303 and 305. *Mrs. Y. Van Ee.*

W51 Multicultural, Alternative School Experience. Students will be placed at Dawn Treader School in Paterson, New Jersey. Dawn Treader is an inner-city, alternative school with a majority/minority culture mix. Special emphasis is given to using the cultural diversity and the urban setting to enhance the motivation and self-esteem of the pupils. The course includes lesson planning, tutoring, required reading, and a

daily journal. The classroom teachers and principal will give daily supervision and conduct weekly seminars. Mr. Lucasse will lead a concluding seminar during the first week of second semester. Fee of approximately \$150. Prerequisite: permission of the coordinator. Off-campus. *Mr. P. Lucasse.*

W53 Curriculum and Methods of Multi-grade Classrooms. Students will be placed in an off-campus multigrade classroom where they will be able to use the spread of pupil ability for individualization and peer tutoring. Special attention is given to management skills for both curriculum and scheduling in the class. The course includes lesson planning, tutoring, teaching, required readings, and a daily journal. The classroom teacher and principal will give daily supervision and conduct weekly seminars. Mr. Lucasse will lead a concluding seminar during the first week of second semester. Fee of approximately \$260. Prerequisite: permission of the coordinator. Off-campus. *Mr. P. Lucasse.*

W54 Effective Use of Small Group Strategies in Regular Classrooms. Even though there are many ways to teach a class, traditionally teachers have either lectured or used some sort of individualized instruction. Students in this course will be introduced to a number of alternative teacher styles that are appropriate in small and large groups and will examine the theories on which they are based. Special attention is given to competitive/cooperative and to homogeneous/heterogeneous groups and to developing guidelines for the implementation of the various group styles. Observing group teaching, preparing lesson plans, videotaping various styles in elementary and secondary classrooms. For education students, persons interested in church education, social work, etc. Prerequisite: sophomore standing. *Mr. P. Lucasse.*

IDIS W14 Students, Teachers, and the Law, *Mr. D. Oppewal.*

IDIS W24 The Power of Critical Thinking, *Mrs. K. Blok.*

Engineering

Professors J. Bosscher (chairman), L. Van Poolen
Instructors ¹R. Hoeksema, K. Peterson, T. Schipper

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

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, 261, and 312; plus four approved electives. The group major in engineering and physics consists of twelve courses. Ten of these must be from the engineering and physics departments, with no fewer than four from either. The remaining two cognate courses must be chosen from a third department.

101 Graphical Communication and Concept Design. F. Graphical techniques for spatial analysis; a study of basic topics in engineering or architectural drawing to provide facility in the transmission of ideas through accepted graphical means. Areas covered include orthographic projection,

free-hand sketching, pictorial representation, auxiliary views, sections and conventions, and basic dimensioning; an introduction to the design process by means of lectures and assigned architectural or engineering projects. Readings are also assigned in design-related areas of creative think-

ing, aesthetics, models, economics, and human satisfaction. *Staff.*

102 Engineering Communication, Analysis and Design. S, one-half course. A continuation of 101 in which the graphical presentation culminates in the working drawing. The concept of a tolerance is added to that of dimensioning. Analysis tools such as graphical mathematics and data presentation including graphical algebra and calculus, the determination of empirical equations from experimental data, functional scales, and basic nomography are presented. An introduction to computer graphics is given. engineering project is assigned to further enhance creative skills in concept design. Prerequisite: 101, Mathematics 161, and enrollment in Computer Science 141. *Mr. K. Peterson, Mr. T. Schipper.*

103 Architectural Communication and Concept Design. Graphical techniques for spatial analysis; a study of basic topics in architectural drawing to provide facility in the transmission of ideas through accepted graphical means. Areas covered include orthographic projection, free-hand sketching, pictorial representation (including perspective), sections and conventions, basic dimensioning, shade and shadows, and charts and graphs. The student is introduced to the design process by means of lectures and assigned architectural projects. Readings are also assigned in design-related areas of creative thinking, aesthetics, economics, and human satisfaction. *Mr. J. Bosscher.*

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, 182, and concurrent registration in Mathematics 261. *Mr. J. Bosscher, Mr. L. Van Poolen.*

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

208 Introduction to Circuit Analysis. S. An introduction to basic circuit concepts. Elementary applications of diodes and transistors. Introduction to dynamic circuits. Included are analog systems and digital logic elements and circuits. Computer analysis is utilized. Individualized laboratory stations are utilized to emphasize basic concepts. Students taking 208 should not also take 308. Prerequisites: Physics 126 and concurrent registration in Mathematics 231. *Mr. K. Peterson.*

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. L. Van Poolen.*

308 Introduction to Circuit Analysis and Electronics. S. An introduction to the theory of electronic circuits and devices and their applications. The following are included: basic A.C. circuit concepts; diode and transistor characteristics and applications; amplifiers; feedback circuits; oscillators; operational amplifiers and their applications; logic elements and digital circuits. This course assumes a prior knowledge of basic D.C. circuit concepts, including node and loop methods and transient circuits, but begins with a brief review of these topics. Individualized laboratory stations are utilized to emphasize basic concepts. Prerequisites: Mathematics 261 and Physics 126. *Mr. T. Schipper.*

309 Fluid Mechanics. F. Basic properties of real and ideal fluids. Fluid statics. Lagrangian and Eulerian descriptions of flow. Continuity, energy, and linear momentum equations in differential and integral forms for compressible and incompressible flows. One-dimensional flow analysis. Introduction to boundary layer theory and one-dimensional compressible flows. Dimensional analysis and laboratory experiments utilized to determine significant flow parameters. Prerequisites: 202 and Mathematics 231. *Mr. L. Van Poolen.*

310 Thermodynamics. S. An introduction to concepts of work and heat, properties of a pure substance, first law, second law, en-

tropy, thermodynamic relations, mixtures, and an introduction to statistical thermodynamics. Prerequisites: Mathematics 231 and Physics 126. *Mr. L. Van Poolen.*

312 Principles of Analog Computation. F, half course. An introduction to the theory and techniques of analog computation, including computer solutions for representative forms of linear and non-linear differential equations. Includes introduction to iterative analog computation using the AD-256 computer. Prerequisite: Mathematics 231 or permission of the instructor. *Mr. K. Peterson.*

314 Vibration Analysis. S. Analysis of mechanical vibration in both transient and steady state regimes, employing analytical and computer techniques for solution. Linear and non-linear problems are investigated with original inquiry suggested and encouraged. Prerequisites: Mathematics 231 and Physics 126. *Mr. J. Bosscher.*

316 Heat Transfer. I, S. An introduction to the analysis of steady and unsteady conduction, of free and forced convection, and of radiation modes of heat transfer. Laboratory experiments are used to emphasize principles. Prerequisites: Mathematics 231 and Physics 126. *Mr. L. Van Poolen.*

318 Control Systems Analysis. I, S. An introduction to linear feedback control theory, including transient and frequency response; stability; systems performance; control modes and compensation methods. Hydraulic, electrical, pneumatic, and inertial components and systems are investigated and employed. Prerequisites: Mathematics 231. *Mr. K. Peterson.*

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

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W51 Engineering Instrumentation. An introductory study of engineering measurement and instrumentation. The course allows two-track specialization, either toward mechanical implementation and application or toward electrical signal characteristics and processing. Extensive laboratory work for both groups to investigate transducer uses and characteristics including physical measurement, accuracy, and reliability. Prerequisites: 208 or 308 and, for those in the mechanical track, 305. *Mr. K. Peterson, Mr. T. Schipper.*

316 Heat Transfer. *Mr. L. Van Poolen.*

English

*Professors H. Baron, E. Ericson, G. Harper, I. Kroese, K. Kuiper (chairman), P. Oppewall, C. Otten, *H. Ten Harmsel, R. Tiemersma, J. H. Timmerman, S. Van Der Weele, C. Walhout, M. A. Walters, S. Wiersma*

Assistant Professors J. Snapper, W. Vande Kopple

THE ENGLISH DEPARTMENT offers a major in English, a minor in English, and a major in English education. Prerequisite to any of these concentrations is a minimum grade of C(2.0) in 100.

The recommended program for a major requires one course from 202, 305, 306, and 307; one from 203, 308, and 309; one from 313, 314, 315, and 321; and one from 302, 329, 330, and 331. In addition, the major program requires 303, 310, 311, and three other courses, including not more than one interim course and excluding 100, 212, 235, 251, 260, 325, and 360.

The recommended program for secondary education is 100, 202, 203, 303, 310, 311, one course from 220, 251, and 326, one course from 329 and 330, and one course from 313, 315, 319, and 321. For this program students must pass a screening test which is given in November, April, and July. Senior majors in teacher education programs must take 336 in the fall and Education 346 and 356 in

the spring. The program for elementary education is 100, 200, 202, or 303, 203, 212, 225, 329 or 330, 235 or 336, 313 or 315. The advisers are H. Baron (elementary) and K. Kuiper and W. Vande Kopple (secondary).

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

The interdisciplinary supplementary concentration in journalism and mass communication requires 260, 360 or 332, Speech 230, and three additional courses from 332, Art 350, Art 351, an internship, and relevant interim courses approved by the adviser, Mr. Steve J. Van Der Weele.

The core requirement in written rhetoric is met by 100 or by examination. The first literature core requirement is typically 220 or 200, 202, 205, 212, or 240, but any course in literature (as distinguished from language, composition, and film) except 260, 325, and 326 may fulfill this requirement. Any literature course 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 **A Survey of English Literature.** F. A comprehensive study of English literature from Chaucer through Johnson. The course is conducted intensively in the major authors rather than inclusively. *Staff.*

203 **A Survey of English Literature.** S. A continuation of 202. The course proceeds from Wordsworth through Eliot. *Staff.*

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

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

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. *Staff.*

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 1982-83.

251 **Introduction to Cinema.** S. A study of the development and structure of cinema as an art form and as a cultural medium. The course aims to develop the student's understanding of cinematic language and to guide him in assessing films and film values. Course work includes readings in film history and criticism as well as the viewing and analysis of movies. *Mr. I. Kroese.*

260 **Basic Reporting.** F. An introduction to the basic practices of journalism with primary emphasis on news-gathering methods, interviewing techniques, and news-writing style. Writing assignments are based on coverage of campus and community events. Prerequisite: 100. *Mrs. Lillian Grissen.*

302 **Medieval English Literature.** F. A study of Chaucer's *Canterbury Tales* and other selections from his work which reflect his literary genius and the major cultural phenomena of his time. Supplementary study of other works and literary movements related to the period. Not offered 1982-83.

303 **Shakespeare.*** F and S. A study of the major works of William Shakespeare. *Staff.*

- 304 **Literature of the English Renaissance.** F. A study of the poetry of the sixteenth century and the drama of the sixteenth and early seventeenth century exclusive of Shakespeare. *Mr. S. Van Der Weele.*
- 305 **English literature of the Seventeenth Century.*** F. A study of poetry and prose in England from 1600 to 1660 with emphasis on the religious lyric, especially the poetry of Donne and Herbert. *Mr. E. Ericson.*
- 306 **Milton.*** S. An intensive study of the poetry and prose of John Milton. *Mrs. C. Otten.*
- 307 **English Literature of the Eighteenth Century.*** S. A study of English poetry and prose in the eighteenth century, with emphasis on the neo-classicists—Pope, Addison, Swift, and Johnson—and a study of the beginnings of the romantic outlook in Gray, Thomson, and Cowper. *Mr. S. Van Der Weele.*
- 308 **English Literature of the Nineteenth Century.*** F. A study of the Romantic writers of England in both poetry and prose, with intensive critical work on Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats. Not offered 1982–83.
- 309 **English Literature of the Nineteenth Century.*** S. A continuation of 308. A study of the Victorian writers of England in both poetry and prose, with intensive critical work on Tennyson, Browning, and Arnold among the poets, and Arnold, Newman, Huxley, and Ruskin among the prose writers. Not offered 1982–83.
- 310 **American Literature.*** F. A study of important writings in the colonial and revolutionary periods, with emphasis upon the culture and writings of the New England group. *Staff.*
- 311 **American Literature.*** S. A continuation of 310. Intensive study of Whitman and Twain. A survey of the realistic movement, the new poetry, and important twentieth-century fiction and criticism. *Staff.*
- 313 **Modern English and American Poetry.*** S. A study of the lyric and dramatic poetry of England and America from 1890 to the present. *Staff.*
- 314 **The English Novel.*** S. A survey of the English novel from its beginnings through Conrad, with emphasis upon the art and thought of the major novelists. Special attention is paid to the development of realistic, romantic, epic, and symbolic strains in modern fiction. The course includes the reading of at least twelve novels. Prerequisite: 200. *Miss H. Ten Harmse.*
- 315 **Modern British and American Fiction.*** F. Intensive reading of selected works of major twentieth-century British and American novelists. *Mr. P. Oppewall.*
- 318 **Studies in American Literature.*** S. Intensive studies of three or four American writers selected from different periods of American literary history, with the selection changed from year to year. Typical groupings are Hawthorne, James, Faulkner; Whitman, Dickinson, Frost, Stevens; Thoreau, Twain, Ellison, Baldwin; or Melville, Hemingway, O'Neill. Prerequisites: 310, 311. *Staff.*
- 319 **Literature since 1945.** S. A study of the fiction and poetry of America and England since World War II. *Staff.*
- 321 **Modern Drama.*** F. Plays by the following authors are read and discussed in relation to the major movements in modern drama: Ibsen, Chekhov, Shaw, Brecht, Pirandello, Beckett, O'Neill, Miller, Williams, Albee, and Pinter. *Miss M. A. Walters.*
- 325 **Children's Literature.** F and S. A study of children's literature, including intensive reading of the best of this literature, and the application of literary standards to what is read. *Mrs. C. Otten, Mrs. P. Tigchelaar, Mrs. J. Walhout.*
- 326 **Adolescent Literature.*** S. 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. A study of some of the more interesting and important characteristics of language, with particular attention given to the assumptions informing the nomenclature, methodology, and scope of traditional, structural, transformational, generative-semantic, and text grammars. The course incidentally considers the relationship of these grammars to the study of reading, composition, and literature. *Mr. W. Vande Kopple.*
- 330 **History of the English Language.*** S. An analysis of the changes that have occurred throughout the history of the English language, based on an intensive study of selected portions of the *Oxford English Dictionary* and passages from Chaucer, Shake-

spere, and various English translations of the Bible. *Mr. S. Wiersma.*

331 **Literary Criticism.*** S. An introduction to contemporary theories and methodologies of literary criticism with investigations into their historical origins and development. The course includes illustrations of the various methods as well as some practical criticism. *Mr. C. Walhout.*

332 **Advanced Composition and Rhetoric.*** S. A practical course in advanced expository writing. Readings in the formal essay, with much systematic writing in such types of composition as description, the formal and informal essay, the informative and feature article, the editorial, and the book review. Open to students who have earned a B(3.0) in 100. *Mr. S. Van Der Weele.*

333 **The Writing of Plays, Poems, and Stories.*** S. A course in the principles of composition of plays, poems, and stories. Works by contemporary authors are analyzed in the light of these principles. Students will practice writing in all three forms. Prerequisite: a grade of B(3.0) in 100. Not offered 1982-83.

336 **Teaching of Writing.*** F. A course in the principles, practice, and pedagogy of composition, especially as these apply to junior high and high school writing programs. Extensive reading and frequent exercises in composition, revision, and evaluation. Senior majors in teacher education programs must take this course in the fall and Education 346 and 356 in the spring semester. *Mr. H. Baron.*

360 **Advanced Reporting.** Further work in feature stories, investigative reporting, and in adapting material for radio and television. *Staff.*

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

395 **Seminar: T. S. Eliot.*** F. Interpretation of the poems and plays of T. S. Eliot, some of his major essays, and some of the important criticism about his work. Three short explanations and one major paper are required. Part of every class session will consist of oral presentations by students. *Mr. S. Wiersma.*

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 litera-

ture, 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. *Staff.*

537 **Teaching of Writing in Elementary and Middle Schools.** A course in the principles and practice of writing, including the study of techniques appropriate for teaching elementary and middle school students to write well. *Staff.*

580 **Principles, Practices, and Programs in Secondary English Education.** F. 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 plus a review of current materials in relationship to improvement of instruction. *Staff.*

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

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

JANUARY 1983 INTERIM

W10 Interim Abroad: English. In lectures and seminars at the University of Wales at Aberystwyth and Abergavenny, students will study the poetry of Henry Vaughan, Gerard Manley Hopkins, Dylan Thomas; and visit sites associated with these poets—Brecon (Vaughan), St. Beuno's College and the Vale of Clwyd (Hopkins), Laugharne, Llanstephan, Fern Hill, Carmarthen, and Swansea (Thomas). In addition, they will hear lectures on Welsh culture, listen to poetry readings by Anglo-Welsh poets, and attend theater productions and recitals. A few days at the end of interim for independent travel. Fee: approximately \$1,500. Off-campus. *Mrs. C. Otten.*

W11 Children's Literature: The Illustrated Book. This course is designed for students who are interested in children's books but who cannot fit 325 into their schedules. It focuses on one area of children's literature: illustrated books, their literary qualities and the authenticity of their art. Students will read books by some of the best authors and illustrators of the past and present, such as Caldecott, Potter, Rackham, Milne-Shepard, Carroll-Tenniel, McCloskey, Keats, Sendak, McDermott, White-Williams, and Jarrell-Burkett. Lectures, films, discussion, reports, book evaluations, and possibly a guest lecturer or artist. *Mrs. Patricia Tigchelaar.*

W12 Western American Literature. A fair-minded look at a number of classic western American writers, who, except for Cather and Steinbeck, are rarely included in textbooks on American literature, not because they lack merit, but because their editors do. The major writers studied are Cather, Clark, Fisher, Guthrie, Manfred, Norris, Steinbeck, and Waters. The first phase of study illuminates the pre-White world of the Sioux and the Cheyenne, the shattering of that world by mountain men, plowmen, cowboys and gun-fighters, real or mythical. The second phase records the tension between the land and the pioneer, between civility and crudeness, between justice and vengeance. The third phase dramatizes the agonizing dilemma of Pueblo Indians forced to choose between tribal beliefs and the white man's creeds, the rape of the West by robber barons in California, and the end of "Westering" in *The Red Pony*. Lectures on background, biography, and critical theory, examination and discussion of the texts,

reports and formal papers by the ambitious. Reading lists will be available before Christmas. Prerequisite: Interest and Intelligence. *Mr. John J. Timmerman.*

W50 Religion and Modern Literature. Literature has its roots in the religious impulse. The twentieth century has seen a resurgence of religious reflection in literary works. Students explore some of the difficult issues in the burgeoning "field" of religion and literature, then go on to examine religious backgrounds of modern literature, paying special attention to bringing a Christian perspective to bear on modern literary texts. Most reading is from primary sources—Kafka, Conrad, Camus, Faulkner, Hemingway, Greene, Golding, Beckett, and Solzhenitsyn. Because of the amount of reading, students are strongly urged to obtain the reading list from the English Department office before Christmas and to do some of the reading before the course begins. A paper is required. Prerequisite: a college course in literature or the approval of the instructor. *Mr. E. Ericson.*

W51 Ernest Hemingway Revisited. A literature course designed for the general student as well as for the English major. Class discussions will concentrate on Hemingway's major themes, his writing style, and his lifestyle. Special attention will be given to the relationships between the author's life and his writings. Students will examine some facsimiles of Hemingway manuscripts. Students will read five novels, some short stories, a biography, and several critical essays. Daily discussions, some lectures, several films. Regular assignments, frequent quizzes on the reading, and opportunities to take part in various class projects. Prerequisite: a college course in literature. *Mr. K. Kuiper.*

W52 Emily Dickinson: The Belle of Amherst. A veil of mystery has long enveloped the life and work of Emily Dickinson, one of America's greatest poets and most intriguing literary personalities. In an attempt to unwrap the veil, students will examine the best of the biographies and literary criticism of her poetry, with emphasis on the connection between the two, and answer the following questions: What strands of New England romanticism are found in the work of this contemporary of Emerson, Thoreau, and Whitman, and how do they mesh with the Calvinistic thinking of her Puritan forebears? What explains her

withdrawal, isolation, and dedication to her poetry? Who were the influential men in her life, and what role did they play in the development of her intellectual, artistic, and spiritual life? What do the poems reveal of her intense struggle with religious faith and doubt, and what was its resolution? How did poetry express her dilemmas and give her life meaning and purpose? Why the long delay in publication and slow growth in her literary reputation? Where does it stand today? Discussions, reports, and readings, filmstrips, and film of Julie Harris' performance in "The Belle of Amherst." Prerequisite: 100. Mr. P. Oppewall.

W53 Legal and Ethical Aspects of Journalism. A study of the legal and ethical constraints—laws, voluntary codes, ethical sensitivity—that regulate the mass media, and the assumptions and values inherent in these regulations. Students will examine landmark decisions as well as more contemporary case histories. In addition, a list of criteria will be assembled to enable the general student to function discerningly as a user of the media, and the journalism student to guide him in his work with the media. A part of the course will be devoted to ethics in writing—the criteria for accuracy,

truth, responsibility, and integrity in writing for the media. Textbook, readings, group reports, guest lecturers. Prerequisite: Speech 230 is desirable. Mr. S. Van Der Weele.

W54 Fantasy Literature. Although fantasy is one of the most popular contemporary literary genres, there has been little critical study of the nature of the genre itself. The aims of this course are three: to examine the nature of the literary genre of fantasy, to locate fantasy literature in the Western tradition, and to enjoy some superb fiction. To enable the student to encompass the extensive reading, a book list containing the works of Tennyson, C. S. Lewis, Tolkien, Le Guin, Donaldson, and Adams will be available before the course begins. Lecture, discussions, and bibliographic research. Prerequisite: 100. Mr. J. H. Timmerman.

IDIS W15 What is the Baroque? Mr. S. Wiersma.

IDIS W18 From "Dada" to Discourses: The Acquisition and Development of Language. Mr. W. Vande Kopple.

IDIS W51 The Movie Genre, Mr. I. Kroese, Mr. G. Harper.

French

Professor A. Otten

Associate Professors †C.-M. Baldwin, B. Carvill (chairman)

Assistant Professor E. Monsma

Instructor C. Gallouët-Schutter

PROGRAMS FOR STUDENTS wishing to major in French are worked out for them individually by the chairman. To be eligible a student must have completed at least two courses in French with a minimum grade of C (2.0) and must have completed 101–102, 121–122, or the equivalent.

The program of concentration includes 201–202 or the equivalent, 215, 216, 217, 218, 311, 312, 313, and 314. Approved courses completed in a junior year program in France may be applied to the program of concentration. Prospective teachers should work out their nine-course major program or their six-course minor program with the chairman. Students beginning their study of French in college should consult the chairman early in their college career. Cognates in a second language, art (231, 232), English or American literature (202, 203, 212, 303), and history (220), are recommended.

All courses above 102 meet core requirements; 217, 218, 311, 312, 313, 371, and 372 meet core requirements in the fine arts.

LANGUAGE

101 **Elementary French.** F. An introductory course in the comprehension and use of spoken and written French. *Mr. A. Otten.*

102 **Elementary French.** S. Continuation of 101. Prerequisite to a program of concentration are 101 and 102. *Mr. A. Otten.*

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

201 **Intermediate French.** F. Further training in spoken and written French, study of the structure of the language, and reading of important literary texts. *Mrs. E. Monsma.*

202 **Intermediate French.** S. Continuation of French 201. *Mrs. E. Monsma.*

215 **Advanced French.** F. For the advanced student who wishes to improve facility in the language, or who is preparing for graduate study or for the teaching of French. Work in spoken French stresses oral fluency through a variety of activities such as topical discussions based on selected readings by modern authors, basic and idiomatic vocabulary drills, and pronunciation work in the laboratory. Work in written French stresses competence through the systematic study of vocabulary, grammatical structures, and a progression of written assignments designed to develop the student's capacity to write in the different genres, including the *dissertation*. Prerequisite: 202. *Mrs. C. Gallouët-Schutter.*

216 **Advanced French.** S. Continuation of 215. *Mrs. C. Gallouët-Schutter.*

LITERATURE

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

217 **Introduction to French Literature.** F. An introduction to the major writers, movements, and themes in French literature. Extensive reading, lectures, *explications de texte*, discussions, and reports. Conducted in French. *Mr. A. Otten.*

218 **Introduction to French Literature.** S. French 217 and 218 are designed to give the student an acquaintance with important works in French literature as well as with the basic knowledge and historical framework necessary for further literary study. *Mr. A. Otten.*

311 **French Drama.*** S odd years. A study of dramatic literature from the Middle Ages to the present day, with emphasis on classical and contemporary drama. Conducted in French. *Mrs. E. Monsma.* Not offered 1982-83.

312 **The French Novel.*** F odd years. A study of fiction from the Middle Ages to the present day with special emphasis on the nineteenth and twentieth centuries. Conducted in French. *Mrs. C.-M. Baldwin.* Not offered 1982-83.

313 **French Poetry.*** F even years. A study of the history and nature of French poetry by means of extensive reading and intensive examination of major poets, with special attention to the themes, forms, and techniques of poets of the modern period, beginning with Baudelaire. Conducted in French. *Mr. A. Otten.*

314 **French Prose.*** S even years. A study of major writers expressing French thought, spirit, and sensibility in nonfiction from Montaigne to Sartre. Special attention is paid to Calvin, Pascal, *les philosophes*, and the Existentialists. Conducted in French. Not offered 1982-83.

371 **Literary Doctrines and Problems.*** S even years. An advanced course devoted largely to literary theory, using as its point of departure a selection of such significant documents in the history of French literature as Du Bellay's *Défense et illustration de la langue française*, the various statements relating to the *Querelle des anciens et des modernes*, Hugo's *Préface de Cromwell*, the transcript of Flaubert's trial, and others. This course includes an examination of the situations and writings which elicited these documents.

Normally this course should be taken after completion of the genre courses. Conducted in French. Not offered 1982-83.

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

395 **Seminar.***

CIVILIZATION

272 **Introduction to French Culture and Civilization.** An introduction to the cultural traditions of France and to the way these are reflected in its social, political, and religious institutions and in its literature, art, and music. The course is taught in English; no knowledge of French is required. Satisfies the foreign culture option for students in designated programs. *Staff.*

372 **French Civilization.** F, even years. A study of French history and geography, with emphasis on the major political, social, and artistic movements of the past and present. Designed to enhance the student's knowledge of French culture and to enrich his literary studies, this course is a comple-

ment to, rather than a substitute for, literary studies. Conducted in French. *Mrs. E. Monsma.*

JANUARY 1983 INTERIM

W10 **Introduction to French Culture.** 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. A reading list will be available before Christmas. Students wanting core credit in the fine arts are required to do an oral presentation. Open to all students, but planned primarily for those in designated preprofessional courses whose programs include the "foreign culture" option. No knowledge of French is required. *Mrs. E. Monsma.*

W50 **French Interim Abroad.** Approximately four weeks in France, of which two will be spent in Paris, followed by a group excursion to one of the provinces. Activities will include language study, lectures on French civilization, visits to museums, monuments, churches, concerts, and the theater. One week will be devoted to independent study and travel prior to returning to the United States. Approximate cost: \$1,300. Prerequisite: 201 or equivalent as well as the permission of the instructor. Off-campus. *Mr. A. Otten.*

Geology, geography, environmental studies

*Professors R. Griffioen (chairman, Department of Physics), C. Menninga, D. Young
Associate Professor H. Aay
Assistant Professor J. Clark*

COURSES in geology and geography are offered to serve the needs of teachers, of students wishing to broaden their perspective and strengthen their general science knowledge, and of those wishing a minor concentration in the area.

The major program of concentration in geology consists of 151 (or 103 or 105), 152, 261, 262, 312, and four additional courses, with field camp recommended. Two courses each in chemistry, mathematics, and physics and one in computer science are desirable cognates and are recommended for students planning to pursue graduate study. Preferred courses are Chemistry 103-104, Mathematics 161-162, Physics 123-124 and 181-182.

The six-course minor consists of Geology 151 or an appropriate alternative,

152, 261, 312, plus additional courses approved by the adviser. Group majors involving geology and chemistry, engineering, or physics are also available.

A supplementary concentration in environmental studies is being developed and will require 201–202.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. Such group majors require twelve courses in the sciences and mathematics, ten of which must be from two departments with no fewer than four from either, with the remaining two courses chosen from a third department. The chairmen of the three departments involved must approve such programs.

Prospective elementary and secondary teachers may minor in geology and geography. Elementary science studies group majors require either Geology 103 or 113 and social studies group majors require Geography 101 or a three-course sequence involving Geology 103 or 113, Geography 201, and 210. The teacher education adviser is Mr. Vernon Ehlers of the Department of Physics.

The core requirement in the physical sciences may be met by Geology 103.

ENVIRONMENTAL STUDIES

201 Human Activities and Natural Environments. F. An examination of the complex system of relationships between human activities and natural environments. The ecology of natural systems will be studied by examining the relationships among their dynamic components. Upon this framework, activities by which societies, past and present, have used, affected, and transformed their natural settings are examined. Not open to freshmen. *Mr. H. Aay.*

202 The Environment and Social Issues. S. A study of the interactions among population, resources, technology, economic, and political activity, and the environment whose study is necessary for understanding and addressing 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 life styles are considered as part of responsible earthkeeping. Not open to freshmen. *Mr. H. Aay.*

GEOGRAPHY

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

201 Introduction to Cultural Geography. F alternate years. A study of man's interaction with his environment, including his climatic and physiographic setting. Consideration of the geographer's approach to gaining, organizing, and displaying information. Prerequisite: 101. *Mr. H. Aay.*

210 Geography of North and South America. F alternate years. A comparative study of the physical, cultural, and economic aspects of both North and South America. Ecological and demographic factors will be considered in some detail. Prerequisite: 101. *Mr. H. Aay.*

GEOLOGY

103 Man and the Earth. F and S, core. An introduction to geology. A study of the materials and processes of the Earth leading to a responsible Christian appreciation for and use of the Earth. The principles of geology are explored through a survey of the history of the ideas about the Earth. Basic insights of chemistry, biology, physics, and mathematics are applied to the solution of practical geological problems, with emphasis on such geological hazards as earthquakes, volcanic eruptions, floods, marine erosion, and mass wasting and on the nature and distribution of fossil fuels, metals, ground water, and other mineral resources. Laboratory. *Mr. D. Young, Mr. J. Clark.*

105 Introductory Field Geology. Summer. An introduction to geology through intensive field study. Students learn the basic principles of geology and become familiar

with important earth materials and processes by means of first-hand observation of such features as the Cascade Range volcanoes, the Pacific Ocean coast, the Klamath Mountains, and the rivers and lakes of southern Oregon. Students live for about three weeks at a base camp located east of Ashland, Oregon, near the crest of the Cascades. Not open to students who have taken 103 or 151. Prerequisite: permission of instructor. *Mr. D. Young.*

113 **Earth Science.** F and S. A study of the physical characteristics of the earth. It includes consideration of the place of earth in space, the structure of earth's crust and interior, rocks and minerals, atmosphere, oceans, and processes giving rise to changes in earth's crustal and surface features. Laboratory. *Staff.*

151 **Physical Geology.** F. A study of the geological structure of the earth. Topics included are: minerals and rocks; formation and alteration of rocks in the earth's crust; earth's interior and surface structure; processes producing geological changes; and the earth as a representative planetary body in space. Laboratory. *Mr. C. Menninga.*

152 **Historical Geology.** S, core. A study of geological structures that have existed in the past and of the changes and development that have taken place in the earth's crust. Evidences for these past structures and events are taken from present rock strata, including the fossil record. Laboratory. Prerequisite: 105, 151, or 103 and permission of instructor. *Mr. C. Menninga.*

261 **Mineralogy.*** F. Major topics considered are: the geometric arrangement of atoms within the mineral crystal; the external crystal form; the physical and optical properties of minerals; and the use of the petrographic microscope. Laboratory. Prerequisites: Geology 105 or 151 and Chemistry 103. *Mr. D. Young.*

311 **Geomorphology.** F. The investigation of landforms and the processes which cause them. This course studies the erosional and depositional features resulting from rivers, glaciers, and wind, as well as coastal, gravitational, and weathering processes. Landforms are described and classified from field observations, topographic maps, and aerial photographs. Explanations of the landforms are offered through quantitative modeling of the processes. Laboratory, field trips. Prerequisite: 151. *Mr. J. Clark.*

312 **Structural Geology.*** S. An analysis of common geological structures such as folds, faults, joints, and foliation; inquiry into the nature of stresses producing these structures; and discussion of the regional structures of North America and Europe with particular reference to the geology of the Appalachians. Laboratory, field trip. Prerequisite: completion of or concurrent registration in 152. *Mr. J. Clark.*

331 **Introduction to 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 include: seismology, earthquakes, and the elastic structure of the earth; 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 include: reflection and refraction seismology, gravimetry, resistivity, and well-logging techniques. Laboratory. Prerequisites: 151, Physics 124 or 126, Mathematics 162, or consent of instructor. *Mr. J. Clark.*

371 **Petrology I.*** F. A study of the mineralogy, chemistry, structure, and texture, field associations, tectonic setting, and genesis of the earth's major rock types. Emphasis is placed on the description and theory of formation of igneous and metamorphic rocks. The petrographic microscope is extensively used in rock identification and interpretation. Laboratory. Prerequisite: 261. *Mr. D. Young.*

372 **Petrology II.*** S. A continuation of 371 involving the study of the earth's major rock types. Emphasis is on the description and theories of formation of the sedimentary rocks. Laboratory, field trip. Prerequisite: 371. *Mr. J. Clark.*

390 **Independent Study.*** F,I,S. Full or half course. Prerequisite: permission of department. *Staff.*

395-396 **Research in Geology.*** F, I, S, half or full course. Field and/or laboratory research on an approved geological problem and presentation of the results of the research in seminar. Open to qualified students by permission of the geology staff. *Staff.*

GRADUATE COURSES

520 **Advanced Earth Science.** This course includes consideration of the main ideas which serve as unifying principles in earth science. Recent discoveries and current research projects are reviewed. The course highlights ideas resulting from studies in earth sciences which have increased our understanding of the relationship between the earth and its human inhabitants. Topics include applications of geology to environmental problems, contributions of space research to understanding the earth, and the relationship between the results of geological study and teachings of the Bible. Spe-

cial attention is given to topics and concepts which can be incorporated into elementary, middle, and secondary school materials and activities. Prerequisite: Earth Science 113 or permission of department. *Staff.*

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

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

German

Professors W. Bratt, J. Lamse

Associate Professors B. Carvill, C. Hegewald (chairman, Department of Germanic Languages)

Programs for students wishing to major in German are worked out for them individually by departmental advisers who should be consulted early. To be eligible a student must have completed at least two courses in German with a minimum grade of C (2.0) and must have completed 101-102, 121-122, or the equivalent.

The typical major requires ten courses in addition to the elementary courses and must include 123, 202, or the equivalent, 215, and at least two courses at the 300-level. Six-course minors must include 215. The nine-course teacher education major must include 215, 216, 250, and two 300-level courses. Students in this program must pass a German grammar test prior to the teaching internship, which is offered only during the spring semester. The teacher education adviser is Mrs. B. Carvill.

Calvin-sponsored programs are available in Germany and Austria for the interim, a semester, or an academic year. Students interested in such programs should work out the details with the chairman and the registrar.

The fine arts core may be met by German literature courses numbered 217 and above.

LANGUAGE

101 **Elementary German.** F. A beginner's course stressing both written and spoken German and including an introduction to German culture. *Staff.*

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

121-122-123 **Introductory and Intermediate German.** F, I, S. A closely integrated

sequence involving two semesters and the interim for students who have completed two years of high school German but who, on the basis of a placement test, are not prepared for 201. The course is also open with the permission of the department to students in teacher education programs who have had no foreign language in high school. *Staff.*

201 **Intermediate German.** F, core. Selected readings, with a continued emphasis

on the development of spoken and written German. Prerequisite: 102, or four units (two years) of high school German. *Staff.*

202 **Intermediate German.** S, core. Continuation of 201. Prerequisite: 201. *Staff.*

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

215 **Intermediate Oral and Written Composition.** F. Exercises, compositions, drills designed to develop in the student intermediate competence in speaking and writing idiomatic German. Prerequisite: 123 or 202. *Mr. J. Lamse.*

216 **Advanced Oral and Written Composition.** S. Continuation of 215. *Mrs. B. Carvill.*

LITERATURE

217 **Readings in Major German Authors.** S, core. Basic introduction to German literature. Selected readings in major German authors from 1750 to 1850. Prerequisite: 123 or 202. *Mrs. B. Carvill.*

218 **Readings in Major German Authors.** F and S, core. Readings in major German authors from 1850 to the present. Prerequisite: 202. *Mr. W. Bratt.*

250 **German Civilization.** F, odd years, core. A study of the German spirit as it finds expression particularly in social customs and institutions, religious and political life, and the fine arts. Lectures and discussions. Prerequisite: 123 or 202. *Mr. C. Hegewald.*

301 **Classicism.*** S, even years. A study of the origins, nature, and literary manifestations of the classical ideal in eighteenth-century Germany. Readings from Lessing, Goethe, and Schiller. Prerequisite: 217, 218, or permission of the instructor. *Mr. J. Lamse.*

303 **Romanticism.*** S, odd years. The literary theory and philosophical-religious basis of the German romantic movement as reflected in representative works of both earlier and later Romanticists. Prerequisite: 217, 218, or permission of the instructor. *Mr. J. Lamse.*

304 **Realism.*** S, even years. Readings in German and Swiss literature of the latter half of the nineteenth century. A survey of the intellectual and cultural changes imme-

diately 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.*

305 **Nineteenth Century Literature.*** S, even years. A comprehensive study of the lives and works of leading German writers of the nineteenth century excluding the Romanticists and poetic Realists. Assigned readings and papers. Prerequisite: 217, 218, or permission of the instructor. *Mrs. B. Carvill.*

306 **Literature of the German Democratic Republic.** F, even years. A survey of East German literature from its beginnings in the late 1940's to the present. The course includes an analysis of the relationship of the literature to the literary theories of Socialist Realism as well as to the political and social structure of the German Democratic Republic. Prerequisites: 217, 218, or permission of the instructor. *Mr. W. Bratt.*

307 **Early Twentieth Century Literature.*** F, odd years. Selected readings in German and Austrian literature from 1890 to 1940, with special emphasis on the works of Schnitzler, Mann, Kafka, Brecht, and Hesse. Lectures, discussions, and assigned papers. Prerequisite: 217, 218, or permission of the instructor. *Mrs. B. Carvill.*

308 **Postwar Literature.*** S, odd years. Readings in German literature from 1945 to the present from such writers as Andersch, Frisch, Böll, and Grass. Lectures, discussions, and assigned papers. Prerequisite: 217, 218, or permission of the instructor. *Mr. C. Hegewald.*

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

395. **Seminar.***

CIVILIZATION

361 **Introduction to Modern German Culture.** S. A survey of the German cultural tradition of the past two centuries as it finds expression in the various arts, with particular emphasis on representative works of literature in translation. Open to all students, but planned primarily for those in designated preprofessional courses whose pro-

grams include the "foreign culture" option. No knowledge of German is required. *Mr. W. Bratt.*

JANUARY 1983 INTERIM

W50 German Interim Abroad. This course will be approximately five weeks in length, and will be conducted in West and East Germany. A brief tour through Northern Germany will be followed by ten days of study in Husum, Schleswig-Holstein. A second study-phase of the course will be conducted in West Berlin, and will be followed by a tour of East Germany. Course participants will be given a week for independent study and travel prior to returning to the U.S. Satisfies departmental concentrations. Prerequisites: permission of instructor and 215 or the equivalent. Fee of approximately \$1,100. Off-campus. *Mrs. B. Carvill.*

W51 Herr Peter Squentz, or "The Play's the Thing." In conjunction with Calvin College's celebration of the "Year of the Baroque" this course will direct students in an investigation of the political, social, religious, literary, and cultural matrix from

which Andreas Gryphius' comedy *Herr Peter Squentz* issued and will culminate in the production of the play by class members. Before the production, students will study the text of the play itself, as well as consider other relevant writings of Gryphius, the most prominent literary representative of the Baroque age in Germany. Prerequisite: basic knowledge of German. *Mr. W. Bratt.*

W52 Business German. Students will be introduced to the background knowledge and skills needed to engage in business dealings with individuals and institutions operating in the economy of the Federal Republic of Germany. In addition to touching on topics such as the free market economy, banking, business administration, business management, and employer/employee relations, students will learn about cultural patterns affecting German-American business relations and will practice the vocabulary and structures of business communication. Lectures, readings, language laboratory exercises, drills, role-play, field trips to local firms. Study materials available in December. Quizzes, reports, final exam. Prerequisite: 202 or equivalent. *Mr. J. Lamse.*

Greek

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

History

*Professors *R. Bolt, H. Brinks, B. De Vries (chairman), **H. Ippel, *G. Marsden, H. Rienstra, F. Roberts, D. Van Kley, E. Van Kley, R. Wells*

*Associate Professor **D. Diephouse*

Assistant Professor S. Greydanus

Multicultural lecturer J. Orkar

PROGRAMS for students majoring in history will be worked out for them by departmental advisers. Such programs will reflect the student's interests both within the field of history and in related departments, his anticipated vocational goal, and the demands of the historical discipline. A minimum grade of C (2.0) in

101 or 102 is required for admission to major programs. For most programs a proficiency in either French or German is advised. Students are asked to consult with departmental advisers early in their college careers concerning their choice of a foreign language and, if secondary teaching is their goal, concerning the various types of programs leading to certification.

The minimum requirements for a major concentration are nine courses in history including 101, 102, or 102 Honors, the departmental seminar (395), and a program emphasizing either American, European, or World History concentrations. One upper-level interim course may be included in the required nine courses. The European concentration requires at least three courses from 301–305, at least one course from 310–312, and at least one additional course from 310–312 or from 355 and 356. The American concentration requires at least three courses from 310, 311, 312, 355, and 356 and at least two courses from 301–305. The World History concentration requires one course from 301–305 (from 301–302 if the student has taken 102), one course from 310–312, and at least four courses from 201, 202, 203, 204, 205, 206, and 320. A 390 in a non-western field is also advised. The world history concentration is designed primarily for teacher education students. Other teacher education programs require two to three courses from both the European and the American sequence with electives from non-western history. A secondary school minor includes 101 or 102; two from 310, 311, 312 (or 211 plus either 355 or 356); 360, and two others. The elementary school minor is 101, or 102, 202, 204, 211, 320, and one other. The ideal teaching minor should include the designated courses in both programs. One upper-level interim course may be applied to a minor concentration. Students seeking special advice on teacher education programs, including group majors for middle school teaching, should consult Mr. S. Greydanus.

The core requirement in history must be met by one course from 101, 102, or 101 Honors; any other regular course in the department will satisfy the additional requirements in the contextual disciplines. Upperclass students who have not completed their core requirements in history should discuss alternative ways of satisfying the requirement with the chairman.

AREA SURVEYS

101 **Western Civilization.** F and S, core. A study of the main cultural currents of Western Civilization with primary emphasis on the period from antiquity through the sixteenth century. *Staff.*

101 **Honors Western Civilization.** F, core. A study of the twelfth century in Europe. The emphasis is on the emergence of Humanism and the discovery of the Individual. Readings in classical secondary accounts and in original sources are the basis for writing four papers. No examination. Enrollment limited to students with a 3.3 cumulative grade point average. *Mr. D. Van Kley.*

102 **Western Civilization.** F and S, core. A study of the main cultural currents of West-

ern Civilization with primary emphasis on the period since the Reformation. *Staff.*

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. B. De Vries.*

202 **Modern Near East.*** S. A study of the transformation of the Near East from the rise of Islam through the establishment of independent national states following World War II. Particular attention is given to

the institutionalization of Islam, the classical Arab Caliphates, the Crusades, the Ottoman Turkish and Safavid Persian states, the modernist movements in Islam, and the problems of the contemporary states. *Mr. B. De Vries.*

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

204 Modern East Asia.* A study of the transformation of East Asian society resulting from the intrusion of the West, from the sixteenth century to the present. Primary emphasis is placed on the civilizations of China and Japan and on the contacts between East Asia and the West. Topics on East Asian religion, philosophy, art, literature, and music are included. *Mr. E. Van Kley.* Not offered 1982-83.

205 History and Society in West Africa to 1800. F. A wide-ranging survey of prominent themes encompassing several centuries of West African history. The principal aim is to introduce students to some of the main currents of West African history and to provide insights into its society and culture. Themes include: pre-colonial times; culture, commerce, and state building; the trans-Saharan and Atlantic trade; Islam and the socio-political changes it brought; the Atlantic slave trade. *Mr. J. Orkar.*

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. *Mr. J. Orkar.*

NATIONAL HISTORIES

211 Survey of American History. F and S. Selected themes in American history from colonial times to the present. This course is not intended for those who plan to take period courses in American history. *Mr. R. Bolt.*

212 England.* F. A survey of English history including the Anglo-Saxon background; the medieval intellectual, religious, and constitutional developments; the Tudor and Stuart religious and political revolutions; the emergence of Great Britain as a world power; the growth of social, economic, and political institutions in the modern period. *Mr. H. Ippel.*

215 Canada.* F. A tracing of the founding and character of New France followed by a careful examination of nineteenth and twentieth century Canada. *Mr. S. Greydanus.*

218 Russia.* 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. *Staff.*

220 France.* S. A survey of the history of France from the "new monarchy" of Louis XI to the present. Particular attention is given to the religious wars of the sixteenth century, the growth of the French monarchy at the expense of other institutions, the character and influence of the French Enlightenment, the nature and repercussions of the French Revolution, and the causes of France's political decline in the late nineteenth century. *Mr. D. Van Kley.* Not offered 1982-83.

221 The Netherlands.* S. An introduction to the history of the Netherlands; the medieval times; the Burgundian period; the Reformation; the Dutch "Golden Age"; the French Revolution; the revival of Calvinism during the later nineteenth century; the changing role of the Netherlands in the twentieth century. *Staff.*

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 medieval background, the Reformation and its impact on later German developments, the religious wars, intellectual developments of the eighteenth and nineteenth centuries, the movement toward political unity in the nineteenth century, World War I, the Weimar Republic, and the rise of the Nazi movement. *Mr. F. Roberts.* Not offered 1982-83.

230 Tiv History. S. A study of the history of the Tiv of Central Nigeria involving, in part, the use of oral traditions, myth, and symbolism. The first half of the course deals with Tiv origins at Swem, migrations to the

Benue Valley, interaction with the Jukun and other ethnic groups, and expansion and assimilation. The second half examines the modern Tiv experience from a multi-disciplinary perspective, including history, law, education, religion, and the arts. *Mr. J. Orkar.*

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. Either Classics 311 or 312 may substitute for this course in history concentrations. *Mr. B. De Vries, Mr. G. Harris.*

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

303 **Renaissance and Reformation Europe.*** F and S. 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. H. Rienstra.*

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

305 **Modern Europe.*** F. 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 political, imperial, military, and economic changes. This course is designed to serve as one of the American sequence and as an introduction to 355. *Mr. H. Brinks.*

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

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

320 **Contemporary World.*** S. A topical analysis of twentieth century history, stressing Europe's place in a global civilization. Major themes include the growth of collectivism; the impact of mass democracy; the "international civil war"; the emergence of Third World societies; and the character of contemporary art, thought, and popular culture. *Mr. D. Diephouse.* Not offered 1982-83.

TOPICAL STUDIES

334 **United States Constitutional History.*** A study of the development of American legal and political traditions using the constitution as the focal point. Emphasis is on such themes as the interrelationship among the three branches of government and the relationship between legal education and the decisions of the courts. Particular attention is given to the Supreme Court decisions as they have reflected or molded social, intellectual, economic, and political change. Not offered 1982-83.

351 **English Constitutional History.*** S. A study of the origins and subsequent developments of English law, legal institutions and constitutional usage from 1066 to the present. Major topics considered are: the

nature of English constitutional monarchy, the growth of Parliament, the development of English Common Law, the Tudor and Stuart revolutions, the Whig oligarchy, and the significant reforms of modern Britain. *Mr. H. Ippel*. Not offered 1982-83.

355 Intellectual History of the United States.* S. An analysis of the changing intellectual patterns in American society as exemplified in religious, philosophical, political, social, and scientific thought. Emphasis is placed on the interaction of thought and society and some attention is given to European influence on American thought. A general knowledge of American history is assumed. *Mr. G. Marsden*.

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

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

380S Field Work in Middle East Archaeology. Summer, 1983. An on-site introduction to archaeological field work in the Middle East designed to expose the student to the methodologies involved in stratigraphic excavation, typological and comparative analysis of artifacts, and the use of nonliterary sources in the writing of Middle East history. Prerequisite: consent of the instructor. *Mr. B. De Vries*.

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

395 Seminar in History.* F and S, honor sections. A course in historiography, the philosophy of history, historical bibliography, and the writing of history. *Staff*.

GRADUATE COURSES

571 Studies in History: Students will engage in a concentrated investigation of a

particular topic or period of history. Advanced reading and discussion of the source materials, literature, problems, interpretations, and more recent findings on a selected period or topic are included. Topic will be selected each time the course is offered. *Staff*.

580 Resources for Teaching History and the Social Studies. An exploration of research in the various approaches to the teaching of history and the social studies on the secondary level. Course requirements include the development of a bibliography of resources for the teaching of history and the social studies which students will relate to the curriculum and philosophy of social studies teaching from a Christian perspective. *Mr. S. Greydanus*.

581 Historiography. The course focuses on historical writing as reflective of different personal and cultural styles and on the role of history in the intellectual adventure of man. Historians will be studied to determine their diverse opinions and interpretations. The focus is on understanding historical writing so that it can be taught more effectively. *Staff*.

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

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

JANUARY 1983 INTERIM

W10 "Our Dancing Has Turned to Mourning:" Native Americans in Canada and the United States. Students examine the clash of two civilizations on both sides of the forty-ninth parallel and explore white attitudes and governmental policies which resulted in unjust treatment of the Native Americans in the mosaic Canadian society and in the integrative society of the United States. Readings, films, and a research paper. *Mr. S. Greydanus*.

W11 Women in America, 1828-1920. A study of the lives of ordinary as well as notable American women, using writings in social history and literature of the period. Students will analyze changes in women's roles that resulted from industrialization and urbanization. Topics include the role of women in religious revivals and social re-

form movements, in the professions and the industrial workplace, within the slave system and in Northern middle-class homes. A reading list will be available in December. One research paper, examinations. *Mrs. S. Hoekema.*

W50 Rewriting the French Revolution. Once upon a time, historians of the French Revolution wrote harmoniously in an Eden of near unanimity provided by the Marxist paradigm. Driven ideologically forward by the Enlightenment of Voltaire and Diderot, the French Revolution, according to this model, was a bourgeois-capitalist uprising which violently overthrew an aristocratic-feudal order, ideologically buttressed, for its part, by Catholicism and an antiquated aristocratic constitutionalism. Historians have recently bitten into an apple of discord, and not only has historian Cain sought to slay historian Abel, but a veritable Babel of discourse—French, German, English, and Italian—has arisen, replacing the innocent harmonies of yore. Beginning with the liberal and conservative traditions of interpretation arising from the Revolution itself, students will concentrate on the recent unravelling of

the Marxist paradigm and raise the question of what, if anything, is taking its place. Emphasis will be on the brave new attempts to recover the independence of political and intellectual dimensions of the Revolution as well as the integrity of the Revolution as an event from the varieties of socioeconomic determinisms heretofore in vogue. Readings from the works of Albert Soboul, Georges Levebvre, Alfred Cobban, Alexis de Tocqueville, François Furet and others will form the basis for daily discussion. One report and an examination. *Mr. D. Van Kley.*

IDIS W16 Dante: The Divine Comedy, *Mr. H. Rienstra.*

IDIS W22 Wooden Shoes in America: A Study of the Christian Reformed Church in North America, *Mr. H. Brinks.*

IDIS W25 Africa: An Introduction for Non-Africans, *Mr. J. Orkar.*

IDIS W59 The European Image of America, *Mr. R. Wells.*

IDIS W50 Background to Blitzkrieg: Social and Economic Aspects of World War II in Europe. *Mr. F. Roberts.*

Latin

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

Mathematics

*Professors P. Boonstra, **T. Jager, S. Leestma, *L. Nyhoff, C. Sinke (chairman), G. Van Zwalenberg, P. Zwier*

Associate Professor D. Brink, J. Kuipers, G. Venema

Assistant Professor M. Stob

Instructors M. Bultje, J. Dersch, C. Smith

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 may complete a program with an emphasis on algebra, analysis, or probability and statistics. Such majors require 161 and 162. The remaining seven 200- and 300-level courses are selected with the approval of the adviser, Mr. Paul Boonstra. Education 356 substitutes for the 391 required in other major programs. The teacher education minor consists of 161, 162, 251 or 351, 261 or 262, 321, and one additional 300-level course.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. These majors are not appropriate for students who anticipate attending graduate school or who are in teacher education programs. Such group majors require twelve courses in the sciences and mathematics, ten of which must be from two departments with no fewer than four from either, with the remaining two courses chosen from a third department. The departmental chairmen of the three departments must approve each such program. Group concentrations involving economics, philosophy, and other departments are possible on an individual basis.

The core requirements in mathematics may be met by 100, 121, 131, or 161.

100 Elements of Modern Mathematics. F and S, core. An introduction to the content, methodology, and history of mathematics. Among the topics which may be covered are cardinal numbers and set theory, axiomatic systems, probability theory, computer programming, groups and fields, and number theory. Prerequisites: a year of high school algebra and geometry. (Previously 109.) *Staff.*

110 Elementary Functions. F. A course in elementary functions to prepare students for the calculus sequence. Topics include the properties of the real number system, inequalities and absolute values, functions and their graphs, solutions of equations, polynomial functions, trigonometric functions, exponential and logarithm functions. Prerequisite: two years of high school mathematics. *Staff.*

121 Fundamental Concepts in Mathematics: The Real Number System. F. and S, core. This course gives the prospective elementary teacher an exposure to elementary mathematics from a more advanced standpoint. It considers the methodology of mathematics as well as the historical development of the real number system. Other

topics considered are logic, sets, axiomatic systems, groups, and number theory. Students may not receive credit for this course and for 100. Prerequisites: a year of algebra and of geometry in high school. (Previously 107.) *Mr. P. Boonstra, Mr. C. Sinke.*

122 Fundamental Concepts in Mathematics: Geometry.* S. The principal focus of this course is geometry. Included is a study of axiomatic systems, congruence, parallelism, similarity, measure, coordinate geometry, and plane transformations. Other topics will depend on the students' background. These may include probability, statistics, computer programming, and introduction to BASIC. Acceptable in non-mathematics MAT concentrations. (Previously 209.) Prerequisite: 100 or 121. *Staff.*

131 Finite Mathematics, Probability, and Statistics. F, core. Topics include a review of algebra, matrix theory, systems of linear equations, linear programming, elementary probability theory, decision theory, descriptive statistics, regression analysis, and statistical inference. The student is introduced to the use of the computer in statistical computations by means of the MINITAB statistical package. Intended for students other

than mathematics and science majors. Prerequisite: two years of high school mathematics. (Previously 206.) *Staff*.

132 Calculus for Management, Life, and Social Sciences. Functions, limits, derivatives. Applications of derivatives to maximum-minimum problems. Exponential and logarithm functions. Integrals. Functions of several variables. The course includes a short module on computer programming using BASIC and use will be made of programming at appropriate points in the course. Not open to those who have completed 161. (Previously 205.) Prerequisite: 131 or permission of instructor. *Staff*.

143 Elementary Statistics. F and S. An introduction to the concepts and techniques of statistics, designed for students with limited mathematical background. Topics include descriptive statistics, elementary probability theory, random variables and probability distributions, binomial and normal distributions, sampling distributions, estimation, hypothesis testing, regression and correlation, analysis of variance, non-parametric methods. The student is also introduced to use of the computer in statistical computations and simulations by means of statistical packages such as MINITAB and SPSS. No prior knowledge of computing is required. Prerequisite: two years of high school mathematics. (Previously 241.) *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. (Previously 111.) *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. (Previously 112.) *Staff*.

231 Differential Equations with Linear Algebra. S. Solutions and applications of first and second order ordinary differential equations. Elementary linear algebra. Higher order linear equations, systems of linear equations, numerical methods, non-linear equations. Prerequisite: 162 and experience in computer programming. (Previously 212.) *Staff*.

251 Discrete Structures. F. An introduction to various discrete mathematical structures. Topics include sets and binary rela-

tions, graphs, algebraic structures, lattices, and Boolean algebras. Combinatorics, algorithms, and abstract computers (Turing machines) are also considered. Also listed as Computer Science 251. Prerequisites: a programming course and 132 or 161. *Mr. M. Stob*.

255 Applied Linear Algebra. F and S. Matrices, row operations, systems of linear equations, pivoting strategies, vector spaces, linear independence, dimension, orthogonality, determinants, eigenvectors and eigenvalues. Emphasis on computations with matrices. Prerequisites: 162 and experience in computer programming. *Mr. D. Brink, Mr. G. Venema*.

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. Not offered 1982-83.

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. (Previously 331.) *Mr. P. Boonstra*.

333 Advanced Calculus for Applications. F. Fourier series, Laplace transform, series methods in ordinary differential equations, orthogonal functions, vector field theory, and partial differential equations. Intended for engineers, physicists, and others interested in applications of analysis. Prerequisite: 231 and 261. (Previously 313.) *Mr. T. Jager*.

335 Numerical Analysis.* S. Analysis of errors in numerical methods, real roots of equations, approximations using polynomials, calculus of finite differences, numerical methods for differentiation and integration, applications to differential equations, applications to matrix algebra, inversion of matrices, characteristic values. Also listed as Computer Science 335. Prerequisites: A programming course and 255 or permission of instructor. (Previously 341.) *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. C. Sinke.*

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. C. Sinke.*

351 Abstract Algebra.* F. Set theory, relations and functions, equivalence relations; the integers, mathematical induction, and elementary number theory; groups, rings, fields, and polynomials. Prerequisite: 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.*

361 Real Analysis I.* F. The real number system, set theory, the topology of metric spaces, numerical sequences and series, real functions, continuity, and differentiation. Prerequisite: two 200-level courses. *Mr. G. Venema.*

362 Real Analysis II.* S. A continuation of 361. Riemann integration, sequences and series of functions, functions of several variables, Lebesgue integration. Prerequisite: 361. *Mr. G. Venema.*

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. (Previously 314.) *Staff.*

381 Advanced Logic.* S. Topics include the formalization of propositional and quantificational logic. Taught jointly with the Philosophy Department and also listed as Philosophy 381. Not offered 1982-83.

385 General Topology.* 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. Not offered 1982-83.

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

391 Colloquium. F and S, quarter course. Meets weekly for an hour for the presentation of various topics in mathematics, computer science, and related disciplines by students, faculty, and visiting speakers. Prerequisite: 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 chairman. *Staff.*

GRADUATE COURSES

510 Advanced Geometry for Teachers. A study of geometry from the point of view of groups of transformations, including considerations of isometries, translations, glide reflections, and similarities. Applications to theorems in Euclidean geometry. Consideration of affine, projective, hyperbolic, and elliptic geometries, and models for each. Prerequisite: 321 or its equivalent. *Staff.*

512 Philosophy and Foundations of Mathematics. A study of the philosophical problems which arise in the context of mathematics; logicism; intuitionism, and formalism; metamathematics and the theorems of Gödel, Church, and Tarski; some philosophical implications of these theorems. Some attention is paid to the philosophical stance of materials and texts written for the classroom. Prerequisite: undergraduate mathematics minor or permission of instructor. *Staff.*

513 Real Analysis and Topology for Teachers. Construction of the real number system; metric space topology with applications to Euclidean spaces, limits, continuous functions, differentiation, and Riemann-Stieltjes integration. Prerequisite: 261. *Staff.*

580 Advanced Methods and Materials in Secondary School Mathematics. A study of methods which can be used to teach mathematics in the junior and senior high school. Consideration is also given to materials, both commercial and teacher-made, which can be used to teach mathematics. Prerequisite: mathematics minor or major. *Staff.*

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

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

JANUARY 1983 INTERIM

W10 No-Proof Geometry for Elementary Teachers. Geometry is a significant part of the elementary school mathematics curriculum. This course does not emphasize proof. By using induction rather than deduction, the student will try to arrive at geometric relationships from working with physical materials. While doing so, the student will consider methods and materials appropriate for teaching geometry on the elementary school level. A final test. *Mr. P. Boonstra.*

W11 The Development of Geometry. The development and history of Euclidean and non-Euclidean geometry will be studied for the purpose of gaining an awareness of the axioms assumed in certain mathematical systems. This study includes the mystery of why Euclid's parallel postulate could not be proved. Students will analyze the attempts at these proofs, examine the foundations of geometry and review the fundamental principles of logic in an effort to detect the flaws in these arguments. The course concludes with some of the philosophical implications of non-Euclidean geometries. Participants are expected to study and work on problems. Prerequisite: an interest in geometry. Satisfies mathematics core. *Mr. G. Van Zwalenberg.*

W51 The Rise and Fall of Mathematical Certainty. In his book *Mathematics: Loss of Certainty*, Morris Kline makes many provocative comments about the nature of mathematics and the alleged certainty of its findings. He says that "most intelligent people today still believe the myth that mathe-

matics is a body of unshakable truths about the physical world and that mathematical reasoning is exact and infallible." Even students with a fairly deep background in mathematics might have such an opinion because it tends to be fostered in classroom lectures and textbooks. Kline claims that certain historical events have taken place beginning in the eighteenth century and culminating in the present century which have rendered the view that "mathematics is a universally accepted, infallible body of knowledge a grand illusion." The course is designed for juniors and seniors and satisfies the interim requirement for mathematics majors. Prerequisite: three semesters of calculus; 351 is recommended. *Mr. P. Zwier.*

W54 Four Colors Suffice. Every map can be colored with only four colors even if any two countries with a common border must be colored differently. Though this fact is simple to state, the proof is recent (1977) and requires the use of a computer to check hundreds of special cases. This use of a computer has caused some to question whether the theorem has in fact been proved in the traditional sense of the word "proof". The philosophical debate thereby generated has touched on such questions as: What is a proof? What is truth in mathematics? Is mathematical knowledge certain? Is there an empirical element in mathematics? The course has two parts: a study of enough graph theory, an interesting branch of mathematics in its own right, to understand the general plan of the four-color proof; a study through reading and discussing papers on the philosophy of mathematics and the philosophical implications of the four-color theorem. Each student will make a presentation based on a paper he has read. Satisfies the interim requirement of the mathematics major. Prerequisite: two semesters of calculus. *Mr. M. Stob, Mr. G. Venema.*

CPSC W53 Computer Graphics, *Mr. J. Kuipers.*

Music

Professors J. Hamersma, H. Slenk (chairman), C. Stapert, D. Topp, J. Worst
Associate Professors D. De Young, G. Huizenga, C. Kaiser
Assistant Professors M. Mustert, *R. Rus

STUDENTS MUST COMPLETE 103, 104, 114, and 124 with a minimum grade of C (2.0) in each for admission to a music major concentration. Applicants will be informed of the department's action within a month after completing these courses. Various concentrations are offered by the department.

Programs for students preparing for graduate work in music

Students preparing for graduate study in music must take 103, 104, 113, 114, 123, 124, 203, 204, 213, 214, 223, 224, 303, and 304; 121, 131, 141, 161, or 171 each semester; 180 each semester; and four additional courses from one of the following areas of specialization: *music history*, 311, 312, 313, 314, or approved interim courses; *theory-composition*, 311, 312, and two from 315, 316, 317; or *applied music*, eight semesters from 210, 220, 230, 240, 260, or 270, including a solo recital.

Programs for students preparing to teach in the schools

Students desiring to teach music in the schools can choose one of three programs. A fifteen-course concentration enables graduates to teach music in grades k–12. Such programs, with a primary emphasis on the secondary level, require 103, 104, 113, 114, 123, 124, 203, 204, 213, 223, 224, 237, 239, 303, and 304; 180 each semester; plus five and three quarter course units from one of the following concentrations: *instrumental music*, 195, 196, 197, 198, 315, 337, five semesters of 140, 150, 160, or 170; and four semesters of 161 or 171; *vocal music*, 311 or 312; 313, or an approved interim; 338; two semesters of 120; five semesters of 130; and six semesters of 131 or 141. This is the appropriate program for students interested in doing graduate work in music education.

A ten-and-a-half-course concentration qualifies graduates to teach in a regular elementary classroom and to teach music in grades k–8. The program requires 103, 104, 113, 114, 123, 124, 203, 204, 233, 237, 239; 180 each semester; and three additional courses from one of the following concentrations; *instrumental music*, 195, 196, 197, 198, two semesters of 140, 150, 160, or 170; and two semesters of 161 or 171; *vocal music*, two semesters each of 120, 130, and 131, or 141; one course from 311–319; and a half-course elective from 213, 214, 223, 224, or applied music. Fine Arts Studies group majors are available for students who wish fewer courses in music.

The seven-course music minor for secondary teachers leads to a certificate for grades 7–12. It requires 103, 113, 123, 233, 234, 237, 239; two semesters of 110, 120, 130, 140, 150, 160, or 170; two semesters of 11, 141, 161, or 171; and one course elective in music.

Programs for students interested in church music

Students preparing for work in church music must take 103, 104, 113, 114, 123, 124, 180, 203, 213, 214, 223, 224, 237, 303, 304, 319, and five and a half course units in one of the following areas: *organ*, 110 (two semesters), 210 (six semesters including some directed field work and a public recital with scores during the first two semesters), 130 (two semesters), 131 or 141 (two semesters) and an interim in church organ music; *choir*, 130 (six semesters), 110 or 120 (two semesters), 131 or 141 (six semesters), 337, 338, and an interim in church choir music which includes some directed field work and a public choral recital.

A six-course minor in church music includes 103, 113, 123, 236, 237, and three additional course units in organ or choir. The organ group requires six semesters of 110; 130; 131 or 141; and an interim in church organ music. The choir group requires four semesters of 130, two semesters of 131 or 141, two semesters of 110 or 120, and an interim in church choral music.

Programs for students interested in keyboard pedagogy

Students preparing for keyboard teaching must take 103, 104, 113, 114, 123, 124, 180, 203, 204, 213, 214, 233, two semesters in a faculty-directed ensemble, and four courses in one of the following areas: *piano*, 120 (four semesters), 220 (four semesters, including a half solo recital during the senior year), and an independent study in piano pedagogy; *organ*, 110 (four semesters), 210 (four semesters, including a half solo recital during the senior year), and an independent study in organ pedagogy.

Programs for students with a liberal arts interest in music

A nine-course general education program is available for students not expecting to teach or to enter graduate school. This program includes 103, 104, 203, 204, 113, 114, 123, 124, and may be completed by either 233, at least one course in applied music, and two electives or by 303, 304, at least one course in applied music, and one elective.

General regulations and advisers

The adviser for applied music majors is Mr. H. Slenk and the adviser for music education programs is Mr. D. Topp. All transfer students must consult Mr. J. Hamersma at their first registration for an evaluation of their transfer credits in music and to receive counseling into the appropriate sequence of music courses. Such students during their first semester at Calvin must validate credits in keyboard harmony with Mrs. M. Slenk and in aural perception with Miss V. Stegink. Those not meeting minimum standards will be required to enroll in 113 or 123.

The fine arts core requirement may be met in several ways. Students with a minimal musical background may prefer 133, 236, 238, or 241. Students with greater musical background should take 233, 234, or possibly, 103. Because 103 satisfies the core requirement and is the initial course in all concentrations involving music, freshmen considering any of these programs should take 103 along with 113 and 123, both quarter courses, which are also part of such programs.

GENERAL AND CORE COURSES

133 **The Enjoyment of Music.** F and S, core. An introductory course in music listening for students of any class level with any sort of background in music. Following a two-week introduction for all students, each student will elect four three-week units from the list that appears below. Each unit consists of eight classroom presentations and discussions plus a final test. Each unit will be completed before the next begins. Students will do listening and reading assignments. Topical units will be chosen from: oratorio, symphony, program music, opera, pre-Baroque music, instruments of the orchestra, church music, the avant garde, choral music, and solo songs. *Mr. C. Kaiser, Mr. D. Topp, and staff.*

233 **History of Music.*** F, core. A study of the art of music from its origins through the Baroque. Score studies, listening repertory, and reading. *Mr. C. Stapert.*

234 **History of Music.*** S, core. A study of the art of music from Bach to the present. Score studies, listening repertory, and reading. *Staff.*

235 **Chamber Music.*** F odd years, core. A general course designed to provide the historical and musical background necessary for perceptive listening to music for small ensembles. The Cayvan Collection of recordings and scores will be used to give the student an insight into music written for trios, quartets, and quintets of string or wind instruments. Not offered 1982-83.

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 four basic genres of popular American music showing their roots in European art music and in American folk music, particularly in country music, folk music, blues and jazz, and rock. *Mr. J. Worst.*

BASIC COURSES

103 **The Materials of Music I.** F, core. A course in the development of the ability to

grasp and notate the rhythmic, melodic, and harmonic elements of music. Students anticipating any concentration involving music must take 113 and 123 concurrently. See note above concerning the use of this course to meet fine arts core requirements. *Mrs. G. Huizenga, Mr. H. Slenk.*

104 **The Literature and Materials of Music II.** S. A continuation of 103. A coordinated study of the historical theoretical and practical aspects of music by means of lectures, score study, written exercises, listening, performance, and reading. A study of the music of the late Baroque and of the Classical eras. Students intending to major in music must take 114 and 124 concurrently. Prerequisite: 103. *Staff.*

113 **Keyboard Harmony I.** F, quarter course. A course in the development of the ability to play at the keyboard the rhythmic, melodic, and harmonic elements of music. The student is required to play all the major, minor, and modal scales as well as easy chord progressions using all the diatonic triads in root position and some in first and second inversion. To be taken concurrently with 103. Prerequisite: piano skills. Others will be required to take remedial piano. *Mrs. M. Slenk*

114 **Keyboard Harmony II.** S, quarter course. A continuation of 113. The student is required to play progressions involving seventh chords in their various inversions, to demonstrate the ability to use secondary dominants at the keyboard, and to modulate to closely related keys by means of common chord and chromatic modulation. *Mrs. M. Slenk*

123 **Aural Perception I.** F, quarter course. A course in the development of the ability to hear and to sing at sight the rhythmic, melodic, and harmonic elements of music. Rhythmic perception involves all note values and rests in various combinations, with an emphasis on duplet and triplet contrasts. Melodic perception involves all intervals smaller than an octave above and below a given note. Harmonic perception involves the major and minor triads in root position, first inversion, and second inversion as well as augmented and diminished triads. To be taken concurrently with 103. *Miss V. Stegink.*

124 **Aural Perception II.** S, quarter course. A continuation of 123. Rhythmic perception in this course involves the use of ties and

syncopation, melodic perception involves the intervals between the octave and the twelfth including one and two-part melodic dictation, and harmonic perception involves the dominant seventh chords as well as harmonic dictations using the chords and triads studied in 123. *Miss V. Stegink.*

203 The Literature and Materials of Music III*. F. A continuation of 104. A study of the music of the Romantic era. Prerequisite: 104. Students whose programs require 213 and 223 must take those courses concurrently. *Mr. J. Worst.*

204 The Literature and Materials of Music IV*. S. A continuation of 203. A study of post-Romantic and Contemporary music. The class will participate in concerts of contemporary and *avant garde* music in cooperation with the Urban Institute for Contemporary Art. Prerequisite: 203. Students whose programs require 214 and 224 must take these courses concurrently. *Mr. J. Worst.*

213 Keyboard Harmony III. F, quarter course. A continuation of 114. To be taken concurrently with 203. Prerequisite: 114. *Mrs. M. Slenk.*

214 Keyboard Harmony IV. S, quarter course. A continuation of 213. *Mrs. M. Slenk.*

223 Aural Perception III. F, quarter course. A continuation of 124. To be taken concurrently with 203. Prerequisite: 124. *Miss V. Stegink.*

224 Aural Perception IV. S, quarter course. A continuation of 223. *Miss V. Stegink.*

237 Conducting. S, half course. A course in basic, general conducting, normally taken in the sophomore year. Prerequisite: 103 or its equivalent. *Mr. A. Armstrong.*

303 The Literature and Materials of Music V*. F. A continuation of 204. A study of Western music prior to 1500. Prerequisite: 204. *Mr. C. Stapert.*

304 The Literature and Materials of Music VI*. S. A continuation of 303. A study of the Western music of the late Renaissance and early Baroque eras. Prerequisite: 303. *Mr. C. Stapert*

ADVANCED COURSES

311 Vocal Polyphony of the Renaissance*. S. A study of the vocal style of Palestrina. Exercises in modal counterpoint.

Listening repertory of compositions. Prerequisite: 303. *Mr. C. Stapert.*

312 Instrumental and Vocal Polyphony of the Late Baroque*. S. A study of contrapuntal practice of late Baroque composers, principally J. S. Bach. Exercises in tonal counterpoint. Listening repertory of compositions. Prerequisites: 304 or 104 and 233. *Mr. H. Slenk.* Not offered 1982-83.

313 Studies in Music History: Classic and Romantic.* F. A study of musical style and thought in the late eighteenth and early nineteenth centuries. Ideas about the nature of Classicism and Romanticism in the various arts are examined for their relevance to the understanding of the music of the period. Readings in the musical, literary, and philosophical sources of the period as well as in more recent writers about the period. Analytical score study of representative works; listening repertory of compositions; several short papers or oral reports. Prerequisite: 203. *Mr. C. Stapert.* Not offered 1982-83.

315 Arranging, Orchestration, and Scoring.* F. Survey of the history of the orchestra and orchestration, and problems involved in writing for orchestra, band, and stage band. A survey of the technical limitations of each instrument and the human voice. Projects written by class members will be performed by department organizations whenever practicable. Prerequisite: 104. *Mr. J. Worst.*

316 Arranging, Orchestration, and Scoring*. S. Continuation of 315, which is prerequisite. *Mr. J. Worst.*

317 Composition*. F and S. Writing in contemporary forms and according to contemporary practice. Prerequisite: 104 or permission of the instructor. *Mr. J. Worst.*

319 Advanced Church Music.* A study of the worship music of the major Christian traditions in relation to their liturgies. Principles of appropriate worship music are discussed in the light of the history of church music. Prerequisite: 203. Not offered 1982-83.

337 Instrumental Conducting. F, half course. A course in advanced conducting techniques appropriate to bands and orchestras. Prerequisite: 237. *Mr. D. DeYoung.*

338 Choral Conducting. F, half course. A course in advanced conducting techniques

appropriate to choirs. Prerequisite: 237. *Mr. H. Slenk.*

390 Independent Study.

MUSIC EDUCATION

238 Elementary School Music.* F and S, core. A study of the content and methods for teaching music in the elementary school classroom. Includes consideration of philosophy and materials. This course is recommended for elementary education students. (Music 239 is required of elementary music education majors.) Only open to freshmen with permission of instructor. *Mr. D. Topp.*

239 School Music.* F. A study of the philosophy, methods, and materials for teaching elementary and secondary school music with emphasis upon research, planning, and teaching. This course is required of secondary music education majors, music minors, and elementary music education majors, and is also open to elementary education majors with a background in music. *Mr. D. Topp.*

APPLIED MUSIC

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.

INDIVIDUAL LESSONS

At least twelve lessons a semester are required and students taking individual lessons must also register for 180.

110 Organ. Quarter course. Individual lessons in organ emphasizing skills for the church organist. *Mrs. S. Boomsma*

120 Piano. Quarter course. Individual lessons in piano. *Mrs. K. Henry, Mrs. T. Hoekman, Mrs. B. Mustert, Mrs. R. Rus, Mrs. L. Vanden Berg.*

130 Voice. Quarter course. Individual lessons in voice. *Mr. A. Armstrong, Mrs. T. Haan, Mrs. G. Huizenga, Mr. C. Kaiser.*

140 Brasses. Quarter course. Individual lessons in cornet, horn, baritone, trombone, or bass horn. *Mr. F. Baker, Mr. D. De Young, Miss M. Gage.*

150 Percussion. Quarter course. Individual lessons in snare drum, tympani, and other percussion instruments. *Mr. W. Vits.*

160 Strings. Quarter course. Individual lessons in violin, viola, violoncello, bass viol, or classical guitar. *The New World Quartet.*

170 Woodwinds. Quarter course. Individual lessons in flute, clarinet, bassoon, saxophone, or recorder. *Mr. R. Anderson, Mrs. R. Bylsma, Mr. M. Kornacki, Mr. B. Weinstein.*

200 Recital Coaching. F and S, no credit. This course is required of all recitalists who will use keyboard accompaniment. *Mrs. R. Rus.* Not offered 1982-83.

210 Advanced Organ. Half course. Individual lessons for the music major concentrating in organ. *Mr. J. Hamersma.*

220 Advanced Piano. Half course. Individual lessons for the music major concentrating in piano. *Mrs. M. Slenk*

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 cornet, horn, baritone, trombone, or bass horn. *Mr. D. De Young.*

260 Advanced Strings. Half course. Individual lessons for the music major concentrating in violin, viola, violoncello, bass viol, or classical guitar. *The New World Quartet.*

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, 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, odd years, half course. Class lessons on all string instruments for the instrumental music education major. Emphasis is on the methods for teaching string instruments. Elementary playing skills are developed. *Mrs. M. De Young.* Not offered 1982-83.

196 **Brass Methods.** S, even years, 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 1982-83.

197 **Percussion Methods.** F, even years, 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. W. Vits.*

198 **Woodwind Methods.** S, odd years, 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

101 **Men's Choir.** F and S, no credit. Open to general college students. *Staff.*

111 **Women's Choir.** F and S, no credit. Open to general college students. *Staff.*

121 **Collegium Musicum.** F and S, quarter course. An ensemble of singers and instrumentalists devoted to the performance of medieval, Renaissance, and Baroque music. Open to all students who meet the requirements of instrumentation and the demands of musicianship. Collegium can also include various other small, faculty-directed ensembles such as string quartet, woodwind quintet, flute choir, trombone choir, and jazz band. These are open to members of band and orchestra who meet the requirements of instrumentation and the demands of musicianship. *Mr. D. De Young, Mr. C. Stapert.*

131 **Campus Choir.** Quarter course. Representative works in the field of choral literature are studied and sung. Emphasis given to the development of singing and sight-reading skills as well as to regular performances. Open to music majors and others who meet the requirements of voice and musicianship. *Mr. M. Mustert.*

141 **Capella.** Quarter course. Representative works in the field of choral literature are studied and a limited number of selections are prepared for concert performance. Membership is maintained at a set limit and is open only to those who meet the demands

of voice, sight reading, and choral musicianship. *Mr. M. Mustert.*

151 **Studio Lab Band.** Quarter course. Representative works from traditional, contemporary, and experimental jazz and rock music are studied and prepared for public performance. Open to a limited number of instrumentalists who meet the demands of musicianship. Does not meet the music major ensemble requirement. *Mr. M. Colley.* Not offered 1982-83.

161 **Concert Band.** Quarter course. Representative works in the field of band literature are studied and prepared for concert performance. Open to all students who meet the demands of musicianship. *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. 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. *Staff.*

511 **School Instrumental Music.** A survey of music and materials available for instrumental classes, small ensembles, bands and orchestras at the elementary, middle school, and high school level. The course covers such topics as the techniques for evaluating materials in terms of their musical value as well as for their effectiveness as teaching tools, the history and the development of literature for the wind band, and the principles of good programming. *Staff.*

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. *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. *Staff.*

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

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

JANUARY 1983 INTERIM

W10 Music Appreciation—Cafeteria Style.

An introductory course in music listening for students of any class level with any sort of background in music. Following a two-day introduction for all students, each student will elect three units from the list that appears below. The same all-encompassing textbook will be used for all units, each of which will consist of four days for classroom presentation and discussion and a fifth day for review and testing. Each unit will be completed before the next begins. Topical units are: oratorio, symphony, descriptive music, opera, piano music, instruments of the orchestra, music of various historical eras. Listening and reading assignments. Satisfies fine arts core. *Mr. C. Kaiser, Mr. H. Slenk*

W11 Basic Music Theory. The elements of music are studied with an emphasis on rhythm, melody, and harmony. Lectures, class discussions, practice sessions, and daily written assignments, including listening to, singing, playing, and writing of rhythms, melodies, and harmonies, and the study of selected compositions that illustrate these musical elements. Recommended for students with musical performing skills who have little or no theory background; for students considering a music major or a major involving music; and for students who did poorly in first semester music classes but wish to continue in some form of music major. Prerequisite: ability to read music in at least one clef. *Mrs. G. Huizenga.*

W12 Singing for Beginners. A course designed to provide instruction in the fundamentals of voice production for those desiring to improve their singing skills. Daily class and private sessions will stress technical skills in tone production, breath support, diction, and sight-singing. Class lectures, demonstrations, and listening assignments explore style and interpretation of classical song literature. Students will keep a journal of their technical and musical progress. Prerequisite: the ability to carry a tune and permission of the instructor. *Mr. A. Armstrong.*

W50 The Church Organist. The objective of the course is to improve service playing and to define the organist's role in reformed liturgy and worship. Sessions will include service music suggested by the liturgical year, hymn and chorale tunes from organ literature, and basic improvisations and accompaniment techniques. Some organ training and/or preferably previous experience as a church organist. *Mrs. S. Boomsma.*

IDIS W15 What is the Baroque? *Mr. C. Stapert.*

IDIS W19 Spiritual Resources for Teachers, *Mr. D. Topp.*

IDIS W26 Music Theater in America, *Mr. J. Worst.*

Nursing

Associate Professor C. Kielinen (chairman)

Assistant Professors C. Danford, T. Manson, J. Martin

Instructor L. Burden

A STUDENT WHO WISHES TO PURSUE a degree in nursing must start work on pre-nursing requirements during the freshman year, following the suggested schedule closely. If possible, students should indicate their interest in nursing on the application for admission to Calvin College. During the first semester, an "Intent to Enter Nursing" form should be completed. Students wishing to enter the Hope-Calvin Department of Nursing should make formal application to the department by January 15 of the calendar year prior to enrolling in the first clinical nursing course. For most students, this will occur during their sophomore year. A cumulative grade point average of 2.3 or better is required, as well as a grade of 1.7 or better in each specified pre-nursing course. Applicants should be aware that admission to the nursing program is selective and is not guaranteed by a student's acceptance to the college. Further information and application forms are available in the Department of Nursing and in the registrar's office.

The Hope-Calvin nursing program is described in detail on page 63. Prospective students should consult Miss Cynthia E. Kielinen.

The baccalaureate nursing program requires fourteen course units: 301, 311, 321, 352, 372, 373, and two sections of 375 in the junior year; and, 401, two sections of 375, 472, 474, and 482 in the senior year.

301. Concepts of Nursing. F. This course introduces the nursing student to the theory and practice of professional nursing. The course focuses upon the concepts of Man, Health, and Nursing. Prerequisites: admission to the nursing program and registration in 311 and 321. *Staff.*

311. Communication, Relationships, and the Nursing Process. F. Communication skills, relationship development, health assessment, and decision making as they relate to the nursing process. Clinical experiences provide opportunities for the application of theoretical concepts to well clients. The first five weeks involve theory presentations. The next ten weeks are comprised of nine hours each week of clinical experience, including family visits. Prerequisites: admission to the nursing program and registration in 301 and 321. *Staff.*

321. Psychomotor Aspects of the Nursing Process. F. This course is designed to assist students in developing general physical as-

essment skills and basic procedural skills necessary for providing nursing care to clients. The course consists of two hours of theory presentation and three hours of laboratory per week. Prerequisites: admission to the nursing program and registration in 301 and 311. *Staff.*

352. Alterations, Adaptations, and Nursing I. S, one and three quarter course. An introduction to the adaptation process of clients in altered states of health. Consideration is given to pathophysiology, socio-cultural factors, and developmental concepts. The role of the professional nurse is examined with respect to leadership, legal-ethical issues, standards of practice, and research. The course consists of four hours theory presentation and two hours of seminar discussion each week. Prerequisites: 301, 311, 321, and registration in two sections of 375. *Staff.*

373. Acute Care Nursing. May-June Term. An in-depth exposure to the reality of nurs-

ing practice providing around-the-clock care for clients with alterations of health status. The four week experience includes a hundred and thirty-six hours of nursing care with a clinical examination during the fourth week. Prerequisites: 352 and two sections of 375. *Staff.*

375 Clinical Nursing. F and S, one and a half course. 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. Students select two different areas while taking 352 and 401. The course consists of sixteen hours of clinical laboratory a week. Students select two sections concurrently with 352 and the remaining two sections concurrently with 401.

Section A—Maternity Nursing
Section B—Pediatric Nursing
Section C—Psychiatric Nursing
Section D—Medical-Surgical Nursing

Prerequisites: 301, 311, 321 and registration in 352 or 401. *Staff.*

401 Alterations, Adaptation, and Nursing II. F, one and three quarter course. This course is divided into core-theory and seminar. Core-theory focuses on nursing care of clients in situations where life processes are threatened. Alterations in physiological regulation, associated psychosocial aspects of individual and family adaptation, and the multidimensional role of the nurse are considered. A concurrent seminar provides opportunities for the student to make relationships between core theory and clinical

nursing experiences. The course consists of four hours theory presentation and two hours of seminar discussion each week. Prerequisites: 373, two sections 375, and registration in two sections of 375. *Staff.*

472 Individualized Clinical Nursing. I, half course. An individualized clinical nursing experience designed to meet specific learning needs of students. An opportunity is provided to select a clinical setting of interest. All nursing shifts and working days are used. The weeks include ninety-six hours of clinical practice. Prerequisites: four sections of 375 and 401. *Staff.*

474 Advanced Nursing Practice. S, two courses. This course is divided into three parts. Each section focuses upon a specific aspect of nursing practice. Students are given opportunities to synthesize previous learning to provide care for clients with complex health problems; to explore roles and responsibilities in community health nursing; and, to assume nurse manager roles in a health care agency. Concurrent clinical experiences provide opportunities for students to relate theory to practice. Each week consist of two hours of seminars and sixteen hours of clinical nursing. Prerequisites: 401, 472, and registration in 482. *Staff.*

482 Nursing in Transition. S. A core theory course which explores organizational structure in relation to the role of the professional nurse as a manager of nursing care for clients. Emphasis is given to multidimensional aspects of nursing, including research and degree of professionalism. Prerequisite: 472 and registration in 474. *Staff.*

Philosophy

*Professors P. De Vos, K. Konyndyk (chairman), *R. Mouw, **C. Orlebeke, †A. Plantinga, N. Wolterstorff*

Associate Professors G. Mellema, D. Ratzsch

Assistant Professors J. Cooper, T. Kennedy

FOR ADMISSION to a major program a student must have completed either 151 or 153 with a minimum grade of C (2.0). The program of concentration requires eight courses including one course in logic, two courses in Perspectives in Philosophy (151–152), two historical period courses (210, 220, 230, 240), one historical figure or movement course, and two courses in systematics, including one from

the advanced level. Students may also meet the departmental requirements by completing Introduction to Philosophy (153) and an intermediate-level systematic course instead of 151–152, provided the historical period courses are chosen from 210, 220, and 230. A four-unit cognate sequence approved by the student's adviser is required in another department.

If a student wishes to present one course toward the core requirement in philosophy, it should be 153. If he wishes to present two courses, they should be: 151 and 152; 153 and either 171 or 173; 153 and any intermediate level course; or, if he is in teacher education, 153 and 209 or Education 304.

ELEMENTARY COURSES

151 and 152 **Perspectives in Philosophy.** F and S, core. A year-long 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. It also aims to give the student some sense of the history of philosophy. 151 is a prerequisite to 152. *Mr. E. Runner, Mr. N. Wolterstorff.*

153 **Introduction to Philosophy.** F and S, core. A one-semester introduction to philosophy, with fundamentally the same aims as the Perspectives in Philosophy course, except that it will not aim to acquaint the student with the history of philosophy. *Staff.*

171 **Introduction to Logic.** F and S. A course in elementary deductive and inductive logic with emphasis upon the use of logic in evaluating arguments. Suitable for freshmen; not recommended for students majoring in philosophy. *Mr. D. Ratzsch.*

173 **Introduction to Symbolic Logic.** F and S. A course in elementary symbolic logic, including some modal logic. This course is designed for students majoring in philosophy, science, and mathematics. Open to qualified freshmen. *Mr. K. Konyndyk, Mr. G. Mellema.*

INTERMEDIATE SYSTEMATIC COURSES

All intermediate courses presuppose one course in philosophy.

202 **Philosophy of Law.** A consideration of such topics as: the nature and types of law; sources of law; and the basis of a legal system, of legal and political authority, of obedience to law, and of human rights. *Mr. P. De Vos.* Not offered 1982–83.

203 **Philosophy of 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.*** F. A study of some philosophical questions arising from religious belief. *Staff.*

205 **Ethics.*** F and S. A course designed to deal both historically and situationally with the persistent problems of the moral life. *Mr. D. Hoekema, Mr. T. Kennedy.*

206 **Philosophy of History.*** An examination of several topics in both the speculative and analytical philosophy of history. *Staff.*

207 **Political and Social Philosophy.*** F and S. A systematic study of the problems of social and political thought, historically oriented, with emphasis on political and social ideals, such as political and social justice; equality and the law; the basis of social and political authority; rights and obligations. *Mr. J. Cooper, Mr. R. Mouw.*

208 **Aesthetics.*** S. A study of the nature of art and aesthetic judgments. *Mr. N. Wolterstorff.*

209 **Philosophy of Education.*** F and S. A study of the nature, aims, and principles of education. *Mr. G. Mellema.*

INTERMEDIATE HISTORICAL COURSES

All intermediate courses presuppose one course in philosophy.

210 **History of Ancient Philosophy.** F. A history of philosophy from Thales to Aristotle. *Mr. C. Orlebeke.*

220 **History of Medieval Philosophy.** F. A history of philosophy from Augustine to the Renaissance. *Mr. K. Konyndyk.*

230 **History of Modern Philosophy.** S. A study of selected philosophies of the seventeenth and eighteenth centuries. *Mr. S. Wykstra.*

240 **History of Contemporary Philosophy.** F. A study of major movements in recent and contemporary Anglo-American

philosophy. Preparation in the history of philosophy is recommended. Not offered 1982-83.

243 **American Philosophy.*** S. Not offered 1982-83.

ADVANCED HISTORICAL COURSES

All advanced courses presuppose at least two courses in philosophy, normally two courses from the intermediate historical group including 230.

312 **Plato and Aristotle.** S. Advanced study of Plato and Aristotle. *Mr. C. Orlebeke.* Not offered 1982-83.

322 **Thomas Aquinas.** F. A course in Thomistic thought which includes an analysis of portions of the *Summa Theologiae*. Not offered 1982-83.

331 **Kant.** F. A study of the *Critique of Pure Reason*. *Mr. L. Hardy.*

332 **Hegel.** S. A study of Hegel's philosophy. Not offered 1982-83.

333 **Kierkegaard.** S. A study of selected philosophical works of Kierkegaard, focusing primarily on his philosophy of religion. *Mr. K. Konyndyk.*

334 **Marx and Marxism.** F. A critical study of the thought of Karl Marx and his most important interpreters, including Lenin and contemporary Marxist humanists. *Mr. J. Cooper.* Not offered 1982-83.

335 **Nineteenth Century Philosophy.** F. A study of the major figures in nineteenth century continental European philosophy. Not offered 1982-83.

340 **Twentieth Century Continental Philosophy.** S. A study of major figures in recent phenomenology and existentialism. Not offered 1982-83.

ADVANCED SYSTEMATIC COURSES

All advanced courses presuppose at least two courses in philosophy, normally two courses from the intermediate historical group.

371 **Epistemology.*** F. A study of the nature, sources, types, and limits of human knowledge. *Mr. N. Wolterstorff.*

375 **Philosophical Anthropology.*** S. A critical examination of major philosophical discussions of the nature of man, with special attention to the concepts of mind, body, action, soul, and immortality. *Mr. J. Cooper.*

381 **Advanced Logic.*** S. Topics include the formalization of propositional and quantificational logic. Taught jointly with the Mathematics Department and also listed as Mathematics 381. *Mr. T. Jager.* Not offered 1982-83.

390 **Readings and Research.*** F, I, S. Prerequisite: permission of chairman. *Staff.*

395 **Ontology.*** S. A study of selected topics of ontology. Not offered 1982-83.

GRADUATE COURSES

501 **The Educational Enterprise: A Philosophical Perspective.** An examination of factors presently operative in the educational enterprise from the perspective of the history of Western philosophy. *Mr. G. Mellema.*

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

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

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W50 **Science and Religion: Some Current Approaches.** Debates concerning what role, if any, Christian beliefs should have in scientific theorizing and scientific evaluation of various kinds of evidence have recently become sharper, spurred in part by literature from the Institute for Creation Research and recent court cases. In order to understand better the issues that should be part of such debates, the student will take a fairly detailed tour of the writings of five authors (mostly working scientists from within the Christian tradition) on the question of the relationship of Christianity to scientific activity. Class presentation on independent reading, and one ten-page term paper. Prerequisite: one course in philosophy. *Mr. D. Ratzsch.*

W51 **The Christian and War.** May a Christian go to war? Christians who hold a Just War theory say that war may sometimes be right and just, while Christians who are pacifists say that war is always wrong. Students will examine some of the history and development of these views, the Biblical support for each view, and the arguments which can

be offered for and against these views. The course also includes consideration of such related issues as the use of nuclear weapons, the policy of "massive retaliation", the "draft", and conscientious objection. One report on a research project in class. Prereq-

uisite: one course in philosophy or permission of the instructor. *Mr. T. Kennedy.*

IDIS W20 **Ancient Greek Civilization**,
Mr. C. Orlebeke.

Physical education

Professors J. Timmer (chairman), M. Zuidema

*Assistant Professors R. Honderd, J. Pettinga, D. Tuuk, **G. Van Anandel, D. Vroon, K. Wolters, D. Zuidema*

*Instructors E. Driesenga, N. Meyer, *N. Van Noord*

THE DEPARTMENT SERVES a number of functions—it provides a required but flexible sequence of physical education courses for all students; it offers professional training for physical education teachers, coaches, and recreation leaders; and it directs an extensive program of intramural, recreational, and intercollegiate sports for men and women.

Admission to any of the majors requires the approval of the department chairman. The ten-and-a-half course teacher education major must include three quarter courses from 100–199, 201, 212, 215, 221, four courses from the 230 series, 301, 302, and 380 for one course unit of credit. Contingent on the appropriate directed teaching experience, a student may be certified at the elementary, secondary, or k-12 levels. The general major requires nine courses and must include 201, 212, 215, two course units from 230, 301, 302, and one course unit from 380. The seven-course teaching minor must include three quarter courses from 100–199, 201, 212, 221, 302, and 380 as a half course. With the approval of the department, 220, 221, or 312 may substitute in major programs for a course from the 230 series.

The program in recreation can lead to either a Bachelor of Arts degree or, if the student wishes, to a Bachelor of Arts in Recreation degree. Students in this program must complete a liberal arts major as well as a concentration in recreation. The adviser for this program is Mr. Glen Van Anandel.

The concentration in recreation consists of nine courses providing the context for the program (Biology 115, Psychology 151 and 211, Physical Education 215 and two course units from 220, 221, 230–239, or 312, Religion 301, and Sociology 151 and 310 or Psychology 310) and five to seven courses in the professional aspect of recreation (Recreation 304, 305, 310, and either two course units of 345 or four course units of 346.)

The liberal arts major required for the recreation program may be either interdisciplinary or in a single department, depending on the interests of the student. An interdisciplinary group concentration requires five courses in one department and three in another and needs the approval of the adviser, the chairmen of the departments concerned, and of the registrar. Departmental

majors, generally following the requirements of the teacher education concentrations are available in art, economics and business, music, physical education, psychology, sociology, religion and theology, and speech. Such programs are described in the departmental sections of the catalog.

BASIC PHYSICAL EDUCATION COURSES

The total of one course unit in basic physical education is required as part of the liberal arts core. Normally students meet this requirement with four quarter courses in four semesters but a three course option is available. Although students may take courses in addition to this, only one course unit of credit may be applied to the minimum graduation requirements.

The initial core course for all students should be 102, 103, 104, or 105. Subsequently, students must select activities courses from the 110-198 sequence until they have completed the required one course unit of credit. Older and handicapped students may satisfy the requirement with courses from 193, the Adaptive Program. Elementary education students as well as majors and minors in physical education may substitute 221, Elementary School Activities and Programs, for one of the courses in the 110-198 sequence.

102 Weight Reduction. F and S, quarter course. This is a specialized course for students needing and desiring to lose weight. It begins with a body weight and fitness evaluation and includes a study of nutritional and health fitness. Students are placed on a scientific program of weight loss and exercise. *Staff.*

103 Therapeutic Fitness. F and S, quarter course. This is a course for students with special medical problems or in need of specific cardio-respiratory fitness development. The college or family doctor is consulted in cases where a medical history is necessary. Fitness and medical needs are evaluated and prescriptive exercise programs are developed. *Staff.*

104 Physical Conditioning. F and S, quarter course. This course aims at building cardio-respiratory and muscular fitness. Various forms of aerobic fitness options are presented, students are told how to make intelligent exercise decisions, and they are introduced to the idea that health fitness maintenance is a Christian responsibility. The course includes readings, lectures, and guided exercise sessions. *Staff.*

105 Health Fitness Dynamics. F and S, half course. This course involves the study of positive health practices in health fitness, including cardio-vascular physiology, nutrition, and exercise. The course includes lectures, laboratories, and discussions along with three exercise sessions a week. This

option is for students seeking a total health fitness building experience. *Staff.*

110-189 Guided Instructional Program. F, I, and S, quarter courses. Various play and sport options are offered in this program. Students are introduced to the techniques and tactics of each sport and are given an opportunity to participate. Courses include: swimming, senior life saving, diving, archery, badminton, bowling, golf, handball, racquetball, tennis, gymnastics, weight training, basketball, volleyball, soccer, softball, folk and square dance, aerobics dance, orienteering, ice skating, cross-country skiing, and downhill skiing. Beginning and advanced skill classes are offered in most activities. Students should select courses that correspond to their skill levels. *Staff.*

191 Specialized Instructional Program. F, I, and S, quarter course. Individual activity options are available through this program. Approved options have included: aerobic fitness, individual and group experience in creative movement expression, and programmed learning in self-defense, skiing, cycling, and mountain climbing. Such programs can be arranged by individuals or groups. A staff member evaluates the requests and supervises the program when approved. *Staff.*

193 Adaptive Program. F, I, and S, quarter course. This is a specialized program for older students and those with physical handicaps. Such students should enroll in

103 as their first course and should complete three semesters of 193. Students who are eligible for this course should consult the physical education representative at registration. *Staff.*

221 Elementary School Activities and Programs. See description under Professional Courses.

PROFESSIONAL COURSES IN PHYSICAL EDUCATION

201 History and Perspective.* F. The course deals with two areas—the history of physical education in the civilized world, and the problems, purposes, and philosophical implications of physical education as they affect man in general and educational institutions in particular. *Mr. J. Pettinga.*

212 Kinesiology. F. A study of human motion from the scientific standpoint. Particular attention is given to a mechanical analysis of musculoskeletal movements as applied to games, sports, and daily living. Prerequisite: a biology core course. *Mr. R. Honderd.*

215 Physiology of Physical Activity.* S. A study of physical efficiency and physiological principles involved in human exercise. Emphasis will be placed on the responses of the respiratory, cardiovascular, and muscular systems. The course includes the physiology of factors affecting performance such as the environment and the use of tobacco, alcohol, and drugs. Prerequisite: a biology core course. *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 and includes an examination of the various characteristics of the learner, an attempt to develop specific theories of how motor skills are acquired, and a review of teaching strategies that are appropriate for teaching them. The focus is on the learner, the learning process, and methods of instruction and includes an evaluation of growth and the developmental factors influencing learning. The course gives opportunities for practical experience in applying motor learning principles. This course substitutes for one course unit in the 230 series. *Mr. M. Zuidema.*

221 Elementary School Activities and Programs.* F and S, half course. The course

provides a working knowledge of the fundamentals of physical education planning for elementary school children. It substitutes for one quarter course in basic physical education (110–198) for physical education majors and minors, and for elementary teacher education students. *Mrs. K. Wolters, Mr. M. Zuidema.*

230–239 The Teaching and Coaching of Activities. Half course. Students with a major concentration in physical education must combine various courses to total the required two-course credit. Prerequisite: a record of participation in skill performance or completion of the same activity in 380.

230 Field Hockey. F. *Miss D. Zuidema.* Not offered 1982–83.

231 Basketball. F. *Mr. D. Vroon.*

232 Baseball/Softball. S. *Mr. J. Pettinga.*

233 Track and Field. S. *Mr. R. Honderd.* Not offered 1982–83.

234 Soccer. F. *Mr. M. Zuidema.*

235 Volleyball/Tennis. S. *Mr. D. Vroon, Mrs. K. Wolters.* Not offered 1982–83.

236 Football. F. *Mr. J. Pettinga.* Not offered 1982–83.

237 Gymnastics. S. *Staff.*

238 Wrestling. F. *Mr. J. Pettinga.*

301 Measurement and Evaluation in Physical Education.* S. A study of the evaluation techniques in physical education. Emphasis on evaluation of physical fitness, body mechanics, growth, motor ability, sport skills, knowledge of health practices and sports activities, and program evaluation. Consideration is given to the organization of evaluation programs and the use of such programs. The course gives opportunity for practical experience in administering tests. *Mr. M. Zuidema.*

302 Organization of the Curriculum and Programs of Physical Education. S. A study of the structure and curricula of modern physical education programs of elementary and secondary schools and the closely-related areas of administration of athletics, intramurals, recreation, and health programs. Opportunity is given to construct total programs of physical education for selected schools. *Mr. M. Zuidema.*

303 Leadership in Recreation Programs. S, half course. This course studies the organization of recreation programs and gives opportunity for observing programs in action, for structuring new programs, and for developing leadership skills. *Mr. D. Tuuk.*

312 Physiology of Conditioning and Injuries. F, half course. The study of physiological principles as they apply to physical training and rehabilitation from injury. Specific types of training programs are studied. Laboratory topics will include athletic injury treatment, taping techniques, and first aid procedures. May substitute for 230 in major programs with the approval of the department. Prerequisite: a biology core course. *Mr. J. Timmer.*

380 Individual Competences. F, I, and S, full or half course. This course offers opportunity for physical education majors and minors to develop the physical condition and skill necessary to be beginning teachers in physical education. It requires active participation and competence in a variety of physical education skills. Students should register for this course when they are admitted to a major or minor in the department and remain registered for it until they have completed the other departmental requirements. Majors, who need a full course credit, must earn 210 points, and minors, who receive a half course credit, must earn 105. Periodic competency examinations are given. Elements of this course are prerequisites for 230 courses. Students must complete at least 200 points before being approved for directed teaching. *Mrs. K. Wolters.*

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

PROFESSIONAL COURSES IN RECREATION

304 Systems and Structures of Recreation. I. F. Modern recreation programs and their organization are identified and studied in this course with particular emphasis on administrative and leadership functions, recreational needs of social groups, and the design of recreational programs, including the problems of finances and facilities. Students observe recreational programs and facilities in therapeutic centers, churches, industry, and the community. Prerequisites: completion of the non-professional courses in the major. *Mr. G. Van Andel.*

305 Systems and Structures of Recreation II. F. Continuation of 304. *Mr. G. Van Andel.*

310 Theories of Play. F. A basic course in the theory of recreation. Professionals in recreation need to understand the basic concepts, definitions, and theories of play and recreation to be able to carry out their pro-

fessional responsibilities. An understanding of the history and theories of play provide a framework for students working toward a Christian perspective on play and recreation and toward their own theories, programs, and practices. Prerequisites: completion of the non-professional courses in the major. *Mr. G. Van Andel.*

345 Field Instruction in Recreation. F and S. Students are assigned to work with field instructors in recreational agencies enabling them to understand the specific agencies and the types of services provided. Individual programs are worked out by the college supervisor, the field instructor, and the student to enable the student to achieve his professional goal. May be repeated once. Prerequisites: 304, 305, 310. *Mr. G. Van Andel.*

346 Field Internship in Recreation and Seminar. F and S, two to four course units. Students electing this course are involved full time in a semester's field experience in a recreational agency. An accompanying seminar on campus focuses on the problems of relating theory to practice. Prerequisites: 304, 305, 310, a minimum cumulative average of C (2.0), and the approval of the department. *Mr. G. Van Andel.*

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W10 Lifetime Sports in Physical Education. This course is designed for physical education majors and minors and recreation majors who are interested in the teaching of lifetime or carry-over sports such as bowling, orienteering, cross-country skiing, badminton, and racquetball. Emphasis is placed on how to teach a variety of such sports through lecture, demonstrations, and limited participation. Research, written abstracts, and a final examination. Fee: from \$10-\$20. *Mrs. K. Wolters. Miss D. Zuidema.*

W11 Recreation in Treatment and Rehabilitation. The purpose of this course is to acquaint the student with clinical recreation programs in the areas of pediatric and adult medicine, mental retardation, mental health, and physical disabilities. Students are given an overview of these illnesses and will develop recreational programming ideas and concepts appropriate to these populations. In addition, specific emphasis will be placed on the therapist's role and the "therapeutic relationship." Lecture, discussion, and "on the job training" in clinical

settings. Major term paper, field placement evaluation, reports, final examination. Recommended for those intending to follow a career in therapeutic recreation. *Mr. J. Beukema.*

W12 Dance and Related Arts in Education. This course explores the use of dance as an educational tool in the elementary classroom. Basic creative dance principles establish the groundwork. Studies include elements of other arts and disciplines (visual art, music, drama, literature, science, mathematics, etc.) providing a variety of stimuli for movement experiences. Students will participate in, design, and teach lessons. Discussions, required readings, writing as-

signments. No previous dance experience required. *Mrs. E. Van't Hof.*

W13 Preventive Health. This course will acquaint students with the scientific data for good and healthy practices. The four main areas studied are nutrition, stress management, exercise, and the practice of a healthy spiritual attitude. Lectures, readings, a short paper, and a final examination. *Mr. R. Honderd.*

IDIS W53 Sports and Play in Christian Society, *Mr. B. Steen.*

IDIS W54 High on Sports, *Mr. J. Timmer.*

Physics

Professors V. Ehlers, R. Griffioen (chairman), A. Kromminga, C. Menninga (Geology), H. Van Till, J. Van Zytveld, D. Young (Geology)

Associate Professors H. Aay (Geography and Environmental Science), D. Van Baak

Assistant Professor J. Clark (Geology)

STUDENTS INTENDING to major in physics are advised to enter college with four years of mathematics and to take their required courses in mathematics (Mathematics 161, 162, 231, 261) and physics (Physics 123, 124, 181, 182, 225, 226) during their freshman and sophomore years. Computer Science 141 is also recommended for the first semester of the freshman year. Students may apply for admission to the department before completing 226 and Mathematics 231, but they must have completed the designated courses with a minimum average grade of C (2.0) before they can be admitted to the major program.

The major program of concentration in physics consists of a total of nine courses, including the required basic physics courses listed above. Each student's program of concentration must be approved by the department and must include an appropriate distribution of theory and laboratory courses as well as cognate courses in mathematics.

Students planning to pursue graduate study in physics should take, in addition to the introductory courses, 335, 345, 346, 375, 376, 380, a minimum of a half course credit of 382, 365 or 379, 395 and 396 or an interim course in research, and Mathematics 333.

The nine-course unit secondary education concentration requires Interdisciplinary 210 or Philosophy 203, Physics 123, 124, 181, 182, 225, 226, 380, one advanced theory course from 335-379, a half course unit of 382, a half 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 312.

The teaching group major in physics and chemistry consists of Physics 123, 124, 181, 182, 225, 226; Chemistry 103, 104, and either 253–254 or 301–302; and two and a half courses of approved electives. Courses recommended for such electives include Physics 380, 382, Chemistry 201, 277, and 278. The adviser for such programs is Mr. Paul Boonstra of the Department of Mathematics and for elementary teacher education programs is Mr. Vernon Ehlers.

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 departmental chairmen of the three departments must approve each such program.

A six-course minor concentration, which is also appropriate for teacher education, consists of 123, 124, 181, 182, 225, 226, 382, plus one and a half course units approved by the department chairman.

The physical science core requirement may be met by 110 or 112. Students preparing to be elementary teachers should take 112 and must complete 113 if any other course is taken instead.

INTRODUCTORY COURSES

110 Physical Science. F and S, core. This course evaluates the basic assumptions used in the scientific study of nature, discusses the methods of scientific investigation and the development of scientific theories, and presents the results of scientific investigations in the fields of physics and chemistry. It also acquaints students with the fundamental laws of physics and chemistry and explains certain important physical phenomena. This course is designed primarily for non-science majors and is not open to those who have taken (or plan to take) 112, 123, 126, or 221. Laboratory. Prerequisites: high school algebra and Mathematics 100, 121, or the equivalent. *Staff.*

112 Physical Science. F and S, one and a half courses, core. The major objectives of this course are the same as those of 110 except that a laboratory-oriented approach is used. Emphasis is placed on the processes and structure of science. The course is intended for future elementary school teachers and makes use of elementary school science programs and materials but is open to all students interested in a laboratory-oriented course. Not open to those who have taken or plan to take 110, 123, 126, or 221. Prerequisites: high school algebra and Mathematics 100 or 121 or their equivalent. *Mr. V. Ehlers, Mr. C. Menninga.*

113 Scientific Processes and Science Teaching. F and S, half course. A study of the processes and structure of science, designed to acquaint future elementary school teachers with the fundamentals of science and their use in elementary school science programs. Extensive use is made of programmed modules and elementary school science materials. For students entering elementary education programs who have taken 110 or Astronomy 110 previously rather than 112, the preferred course. Not open to students who have taken 112. Prerequisite: 110 or Astronomy 110. *Mr. V. Ehlers.*

123 Introduction to Modern and Classical Physics. F, half course. This course, along with 124, serves as an introduction to both classical and modern physics for students planning to major in science or mathematics. Mathematically qualified students are encouraged to satisfy the core requirement with 123–124 rather than with 110. Topics in classical physics include mechanics and thermodynamics. The nature of scientific study in general and its place in one's world and life view will be discussed. Prerequisites: concurrent registration in or completion of 181, Mathematics 161, and, if possible, Computer Science 141. *Mr. J. Van Zytveld.*

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. *Staff.*

126 Introductory Physics: Mechanics and Heat. S. An introduction to classical Newtonian mechanics applied to linear and rotational motion; a study of energy and momentum and their associated conservation laws; an introduction to the concept of heat and a study of the first and second laws of thermodynamics. This course serves as a preparation for 225 and is intended primarily for engineering students and others who cannot fit 123–124 into their programs. Prerequisites: Mathematics 161 and concurrent registration in Mathematics 162 and Physics 186. *Staff.*

195 Physics Student Seminar. F and S, no credit. An introduction in a seminar format to recent developments in physics. Both readings and laboratory topics are available for study and discussion. Junior and senior physics majors must attend each semester; freshmen and sophomores intending to major are encouraged to attend. *Mr. D. Van Baak.*

221 General Physics. F. One and one-quarter 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. *Staff.*

222 General Physics. S, core. One and one-quarter course. A continuation of 221, which is a prerequisite. Laboratory. *Staff.*

223 Physics for the Health Sciences. F. An introduction to those topics in physics which are basic to work in a variety of health science fields. The course is oriented toward understanding some of the basic laboratory techniques and instruments which are fundamental to medical and para-medical instrumentation. Topics include physical measurements and data analysis, basic mechanics, heat, electric and magnetic fields, electric circuits, basic electronics and instrumentation, optics, radioactivity, and X-rays. Prerequisites: high school geometry and algebra. Not open to those who have taken or plan to take 221. *Mr. R. Griffioen.*

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, Mathematics 162, and concurrent registration in Mathematics 261. *Mr. R. Griffioen, Mr. D. Van Baak.*

226 Introductory Modern Physics. S. An introduction to quantum effects and the wave-particle duality of matter and radiation; a study of the structure of atoms, molecules, solids, nuclei, and fundamental particles as described by Schroedinger theory. Einsteinian relativity is also considered. Prerequisites: 225, Mathematics 261, and Computer Science 141. *Mr. R. Griffioen.*

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 380, 381, or Engineering 208 or 308. Laboratory. Prerequisite: Mathematics 132 or 161. *Mr. J. Van Zytveld.*

380 Analog and Digital Electronics.* S. An introduction to electronic circuits and devices and their applications. The following topics are included: A.C. circuit analysis; diode and transistor characteristics; amplifiers; oscillators; operational amplifiers; digital logic gates; flip-flops; counters; and integrated circuits. Laboratory exercises in all of the above topics are performed. Prerequisite: 225. *Mr. K. Peterson.*

385 Introduction to Microprocessors.* F, alternate years. An introduction to microprocessors, including the following topics: technology of microprocessor development, microprocessor architecture, programming, systems design, interfacing, and peripherals. Laboratory. Prerequisite: 285 or its equivalent and programming experience. *Staff.*

ADVANCED THEORY COURSES

Prerequisites for all of the 300-level physics courses are Computer Science 141 or its equivalent and Mathematics 231.

335 **Classical Mechanics.*** F. The motion of particles, of systems of particles, and of rigid bodies is studied by Newtonian and Lagrangian techniques. Topics included are: oscillatory motion, motion in a central force field, motion in non-inertial reference frames, motion of charged particles, and the inertia tensor of rigid bodies. Hamilton's canonical equations are developed and applied to simple systems. Prerequisite: 124 or 126. *Mr. J. Van Zytveld.*

345 **Electromagnetism.*** S. The basic equations of classical electromagnetic theory are developed. Applications are made to electromagnetic fields in material media, boundary-value problems, electromagnetic energy, radiation, and physical optics. Relativity with its connection to this theory is studied. Static field theory is considered in 345 while dynamic field theory and special relativity are developed in 346. Prerequisite: 225. *Staff.*

346 **Electromagnetism.*** F. A continuation of 345, which is a prerequisite. *Mr. A. Kromminga.*

365 **Thermodynamics and Statistical Mechanics.*** S. Discussion of the equation of state and the laws of thermodynamics with application to some simple systems; the thermodynamic potentials; kinetic theory. Treatment of statistical mechanics dealing mainly with ensembles and distribution functions, calculation of entropy and the thermodynamic potentials with application to crystals and gases. Quantum statistical mechanics is considered. Prerequisite: 335. *Staff.* Not offered 1982-83.

375 **Quantum Mechanics.*** F. The main emphasis is on wave mechanics and its application to atoms and molecules. One-electron atoms are discussed in detail. Additional topics discussed are electronic spin and atomic spectra and structure. Nuclei, the solid state, and fundamental particles are also considered. Prerequisite: 226. *Mr. 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 the major areas of current research in physics. Primary emphasis is placed upon solid-state, atomic, nuclear, and 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 chairman. *Mr. D. Van Baak.*

LABORATORY COURSES

181 **Basic Electrical Measurements.** F, quarter course. An introduction to basic D.C. electrical measurements including Kirchhoff's Laws, potentiometer circuits, and bridge circuits. Techniques of data handling and analysis and a brief introduction to A.C. circuits are included. *Mr. J. Van Zytveld.*

182 **Electrical Measurements.** S, quarter course. Applications of D.C. electrical measurements; A.C. circuits, including experiments on frequency response and resonance; and an introduction to digital circuitry. Prerequisites: 181 and Mathematics 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. 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: 380, Engineering 308, or a year of college physics and permission of the instructor. *Mr. D. Van Baak.*

395-396 **Physics Seminar and Research.*** F, S, half course; I, full course. Experimental or theoretical research on an approved topic and presentation of the result of the research in a departmental seminar. Prerequisites: 382 and the approval of the department. *Mr. D. Van Baak.*

GRADUATE COURSES

510 **Physical Science and Contemporary Society.** This course is designed to show the elementary or middle school teacher how physical science and its resulting technology interact. It does not deal primarily with

the concepts and theories of physical science, but will focus on the societal impact of physical science. Topics of major interest include energy sources and energy use, supply and use of other material resources, and the limitations of physical science in solving societal problems. Prerequisite: 112 or its equivalent. *Staff.*

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

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

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W10 **Teaching Evolution and/or Creation in Public and in Christian Schools.** This course deals primarily with the issues involved in the current discussion of teaching evolution and/or creation in the public schools, with a brief review of the historical context. Readings from a reference text and current periodical literature, one or two brief papers and short tests of factual knowledge. This course is useful for prospective teachers and prospective scientists as well as for prospective parents and school board members. *Mr. C. Menninga.*

W11 **The Life and Times of Albert Einstein.** This course considers several aspects of the life of Albert Einstein and the turbulent times in which he lived. His contributions to physics are discussed with emphasis on special relativity and early quantum

theory. The philosophical basis of dissatisfaction and rejection of later developments in quantum theory is analyzed. Einstein became a worldwide folk hero overnight when his prediction about the bending of light near massive bodies was confirmed. An attempt is made to analyze this phenomenon, one which completely mystified Einstein himself. Einstein supported several causes, in particular pacifism, Zionism, and intellectual freedom. His contributions to these causes and the way his thinking regarding them evolved in response to the events of the times are an important concern of this course. In later life, Einstein became completely uninterested in material possessions and said some striking things with regard to this. The final topic is how Einstein, though not a Christian, may serve as a model in this age of growing scarcity and threatening nuclear holocaust. Satisfies physical science core. *Mr. A. Kromminga.*

W12 **Energy in the United States.** Students will consider the production, distribution, and consumption of energy in the United States. Topics to be covered include the physics of energy, the United States energy budget, the possibilities of energy conservation, the costs and risks associated with energy use, and the pro's and con's of various means of energy production. Lectures, problems, and a project report. *Mr. D. Van Baak.*

IDIS W12 **Earthkeeping.** *Mr. H. Aay, Mr. V. Ehlers.*

IDIS W24 **High on Sports.** *Mr. J. Van Zytveld.*

Political science

Professors J. De Borst (chairman), J. Westra
*Associate Professors **R. De Vries, J. Penning, C. Smidt, C. Strikwerda*

To be admitted to a major program in political science a student must have completed one of the core credit courses (151, 201, 202, 203, or for Canadians, 210) with a minimum grade of C (2.0). The major program requires: 201, 203 or 303, 207, 305 or 306, and six additional courses in the department. Canadian students should take Political Science 210. Students planning to pursue graduate work in political science should take 302 and both 305 and 306.

Students preparing for a secondary teaching certificate should follow the normal major but need complete only five additional courses. A teacher education minor requires 151, 201, 202 and three additional courses approved by the departmental adviser for teacher education, Mr. Robert De Vries.

A general departmental minor consists of a course in American politics from 201, 202, 209, 310, 312, 313, or 315, a course in comparative and international politics from 203, 206, 207, 210, 303, 308, or 309, a course in political theory from 151, 305, or 306, and three additional courses, one of which may be an interim course.

Although the core may be satisfied by 151, 201, 202, 203, or 210, Canadians are advised to take 210 and prospective elementary teachers either 201 or 210.

151 Introduction to Politics. F and S, core. A general survey course which introduces students to the nature and study of politics and includes some of the enduring questions of conflict and cooperation within and between nation-states. *Staff.*

201 American Politics. F and S, core. A study of American national politics. Emphasis is on the social context, constitutional foundations, and the major institutions, processes, and functions of American politics. *Staff.*

202 American State and Local Politics. F, core. A study of American politics on the state and local levels. A comparative approach is used to analyze existing problems and the differences and similarities in political patterns. *Mr. J. Penning.*

203 Comparative Government—Europe. F and S, core. A study of the government and politics of Great Britain, France, Germany, and other Western European states. *Staff.*

206 Comparative Communist Systems. S. A comparative study of Communist political systems with emphasis on the Soviet Union and its relationships with East European and other Communist states. *Mr. C. Strikwerda.*

207 Introduction to International Politics. F. A study of power relations among nation-states analyzing different theoretical approaches to the study of international politics, describing the state system and its basis in the doctrine of sovereignty, and examining the phenomena of nationalism, imperialism, and war. Included are the problem of war and peace and how states try to resolve conflicts peaceably through diplomacy. *Mr. R. De Vries.*

209 Public Administration. S. An introduction to the political process. Principles of administrative organization, public management, personnel administration, and budgeting. The political and administrative problems encountered by government agencies charged with carrying out public policies. *Mr. J. Penning.*

210 Canadian Government and Politics. S. A study of the political system of Canada with emphasis on national (federal) government and politics. Major topics covered include the origins and development of Canada's political institutions; Canada's constitution, Canadian federalism; the operation of the parliamentary-cabinet system in Canada; political parties and elections; social forces and trends in Canadian politics. This course carries core credit for Canadian students only. *Mr. J. Westra.*

302 Public Opinion and Electoral Behavior. F. Analysis of American public opinion and electoral behavior. Particular attention is given to such topics as the formation and change of public opinion, stability and change in American patterns of political participation, and the role that elections and public opinion play in making public policy. In addition, attention is given to the theory and methods of the behavioral orientation in political science. *Mr. C. Smidt.* Not offered 1982-83.

303 Comparative Government—The Non-Western World.* F. A study of the politics of Asian and African states. Emphasis is on the issues and problems posed by the modernization process. Not offered 1982-83.

305 History of Political Thought to the Reformation. F. The development of political

thought from ancient Greece to the sixteenth century. *Mr. J. Westra.*

306 History of Modern Political Thought. S. Representative political theorists from the Reformation to the present. *Mr. J. Westra.*

308 Principles of American Foreign Policy.* S. An analytical view of American foreign policy; its domestic sources; the process of formulating policy; the instruments of American diplomacy; the nature of U.S. relations with hostile powers, allies, the emerging nations, and the United Nations; the limitations and potentials of American foreign policy. *Mr. R. De Vries.* Not offered 1982-83.

309 International Organizations.* F. An examination of regional and universal international organizations; their processes, functions, and impact on the international system. The United Nations system is examined, as well as economic and political integration within the North Atlantic area, among Communist states, and in the Third World. *Mr. R. De Vries.*

310 The Judicial Process and Civil Liberties.* S. A study of the judicial process in American politics. Special attention is given to the role of the Supreme Court, the power and practice of judicial review, and the Court's interpretations of the Constitution, especially in the area of freedom of expression and defendant rights. *Mr. J. De Borst.*

312 Legislative Behavior.* S. A study of legislatures, legislators, and the legislative process including the impact of institutional structures, political parties, interest groups, and personal norms on the legislative process in democratic political systems. The emphasis is on the federal Congress, but non-American legislatures are considered for comparative purposes. *Mr. C. Strikwerda.* Not offered 1982-83.

313 Political Parties.* F. A study of political parties and their role in the political process. The approach will be comparative: different types of party systems; typologies and classifications of parties; different patterns of leadership, membership, organization. Emphasis will be on parties in Western democratic systems with special attention given to American political parties. *Mr. C. Smidt.*

315 The American Presidency.* F. 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.*

380 Internship in State and Local Government. S, two course units. A field experience involving working for a government agency, an elected government official, or a private interest group at the state or local level of government. Student interns work ten to sixteen hours per week for thirteen weeks under the direction of an agency instructor. Interns also attend weekly seminars conducted by the college instructor and maintain a detailed journal which includes a daily log of activities and comments on those activities. Prerequisites: two political science courses, including 202, and permission of instructor. *Mr. J. Penning.*

390 Independent Study.* F, I, S. Reading or directed projects for majors. Open with the permission of the chairman and the instructor under whom the work will be done. *Staff.*

395 Seminar.*

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W50 Land Use Politics in the United States. A study of the politics of land use planning, zoning, and growth management at the state and local levels of government. Students will trace the history of land use planning and analyze current controversies over efforts to limit state and urban growth, examine the basic structural features of America's land use regulatory system, and discuss the motivations and concerns of the various individuals and groups seeking to influence land use policy. Lectures, films, possible guest speakers, and student papers. Prerequisite: one course in political science or permission of instructor. *Mr. J. Penning.*

W51 United Nations Interim in New York. A study of the activities, functions, and structure of the United Nations system through an extensive series of briefings with personnel of the United Nations secretariat and specialized agencies as well as with members of some of the national missions to the United Nations. Readings and seminars will be integrated with the briefings. Some of the areas of study include peacekeeping,

disarmament, the role of the secretary-general, economic development, population, food, and the environment. Students will prepare a report on one of these topics. A list of required readings will be available in December. Prerequisites: permission of the instructor and one course in political science. Fee: approximately \$610. Off-campus. Mr. R. De Vries.

W52 Mass Media and American Politics. A survey of the relationships between the operation of mass communications and the functioning of American politics. Major topics include the processes by which news is created and transmitted; the effects of mass media in structuring political attitudes and opinions; the impact of the mass media on the conduct of electoral politics; and the ethical and legal considerations concerning the need for governmental secrecy and the public's right to know. Prerequisite: 201 or permission of the instructor. Mr. C. Smidt.

W53 Interim in Washington: Christian College Consortium. Calvin College is a member of the Christian College Consortium which conducts a January interim in Washington, D.C. This interim is an in-depth study of a current public policy issue or a series of issues and provides opportunities for students to explore the rich resources of the nation's capital. Students attend classes five mornings each week, with periodic afternoon field experiences and small group discussions. Only a limited number of Calvin students can be accommodated. Applications, accompanied by a \$100 deposit, must be made by October 1, 1982. The deposit is refunded if a student is not accepted for the program. Additional information about the program can be obtained from Mr. C. Strikwerda. Off-campus.

W54 Interim in Washington, D.C.: Washington Center. For students who cannot be accommodated in the January Interim of the Christian College Consortium/Coalition, there is an alternative program conducted by the Washington Center for Learning Alternatives. This Washington Winterim, held during three weeks in January, involves a concentrated examination of the national political scene which combines lectures, briefings, site visits and small group discussions. The 1982 Winterim will focus on the new federalism—the new Congress and participants will analyze and discuss problems and processes as they relate to foreign affairs, the economy, party politics, energy, political news reporting, business-government relationships, and human/civil rights. Costs include \$485 in fees plus travel. Applications must be made by November 1, 1982. Additional information about the WCLA can be obtained from Mr. C. Strikwerda. Off-campus. Mr. C. Strikwerda.

W55 Presidential Wars. Students will examine the role of the American presidency in foreign wars. Despite the constitutional "separation of powers", the United States' presidents have initiated, directed, and concluded foreign conflicts, often utilizing only a small group of advisers. Using the Korean and Vietnam wars as primary case studies together with additional illustrative cases, students will focus on the assumptions and events leading up to the presidential initiatives, the decision-making process during the conflict, the effect of domestic opposition, and presidential efforts to conclude the conflict. Books, articles, films. Prerequisite: 151 or 201. Mr. J. De Borst, Mr. C. Strikwerda.

IDIS W52 Calvinist Roots: Radical or Conservative? Mr. J. Westra.

Psychology

Professors M. Bolt, W. Joosse, A. Reynolds, R. Stouwie (chairman), R. Terborg, M. Vander Goot
Associate Professors J. Brink, W. Sanderson, S. Stehouwer, G. Weaver
Assistant Professor A. Shoemaker

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, excluding 313. Not more than one interim may be included in the nine-course major nor may 390 be counted as a 300-level elective.

Students intending to do graduate work in psychology or related fields should include 395 in their program of concentration and should plan their programs with a departmental adviser.

The teacher education minor consists of six courses: 151, 212, 306, 311, one course from 330-334, and one elective.

The general psychology minor consists of six courses: 151, 250 or 306, one course from 330-334, and three electives including one additional 300-level course. One elective may be an interim course.

The core requirement in psychology is best met by 151. Education 301 satisfies the core requirements for students in teacher education programs and serves as a prerequisite for 200-level courses only.

151 Introductory Psychology. F and S, core. An introductory course intended to give an orientation to the field of psychology. 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: Life-span. 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 psycho-social factors which influence that behavior. Not open to students who have taken or plan to take 204 or 207. Prerequisite: 151. *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 or 207. Prerequisite: 151. *Mr. A. Shoemaker, Mr. S. Stehouwer, Mr. R. Stouwie, Mrs. M. Vander Goot.*

207 Developmental Psychology: Adolescent.* F. A study of the transitional years of human development from puberty to early adulthood. Emphasis is on developmental changes and on the tasks which the adolescent faces in his different roles. Not open to students who have taken or plan to take 201 or 207. Prerequisite: 151 or Education 301. *Mr. R. Stouwie.*

211 Personality and Adjustment. F. A study of psychological theory and research pertinent to personality dynamics and adjustment. Coverage includes concepts of

mental health, need fulfillment, sources of conflict and stress, the nature and effects of anxiety, the self concept, and principles of emotional and interpersonal competence. Attention will be given to the personal application of these topics. Prerequisite: 151. *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. *Mr. G. Weaver, Mr. S. Stehouwer.*

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. Prerequisite: 151. *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. Prerequisite: 151. *Mr. A. Reynolds.*

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. *Mr. W. Sanderson.*

308 Experimental Psychology.* S. A continuation of 250 with an emphasis on gener-

al research methodology at both the conceptual and applied levels. Consideration is given to topics such as the scientific study of human behavior, the formulation of research problems and hypotheses, research design, statistical inference, decision making, and the writing of research reports. For major and others interested in the social, behavioral, and health sciences. Prerequisite: 250 or permission of instructor. *Mr. A. Shoemaker.*

310 Social Psychology.* F and S. A critical study of the individual's relationship to other individuals, groups, and cultures. Attention is given to such topics as beliefs, attitudes, and values; social influence and conformity; interpersonal perception and attraction; aggression and social conflict; altruism; and collective behavior. Students may not receive credit for this course and Sociology 310. Prerequisite: 151. *Mr. M. Bolt, Mr. J. Brink.*

311 Theories of Personality.* F and S. An introduction to modern American and European theories concerning the psychological structure, dynamics, and development of the human personality. Prerequisites: 151, 212. *Mr. J. Brink, Mr. W. Sanderson.*

312 Principles of Psychological Measurement.* F. An introduction to the theoretical and practical issues, viewpoints, and techniques of psychological testing in the areas of intelligence and personality. Test construction, including those that measure academic achievement, is emphasized. Prerequisite: 250, Mathematics 143, or 343. *Mr. A. Reynolds.*

313 Mental Health and the Classroom.* F. An introduction to the developmental needs and common developmental crises of school age children. Emphasis is on the methods of communication and classroom management which allow the teacher to promote healthy adjustment. Prerequisite: 151 or Education 301. *Mr. S. Stehouwer.*

314 Clinical Psychology.* F. An introduction to the science, techniques, and art of employing psychological means to promote the welfare or mental health of persons. Prerequisites: 212, 311, 312. *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, 311. *Mr. J. Benthem.*

322 Perspectives of Psychology.* S. The purpose of this course is to explore the relationship of psychology to—or its involvement in—such areas as literature, religion, art, and morality. This course will be taught in 1983 by Mrs. M. Vander Goot and will develop a Christian view of the historical and philosophical background of psychology.

323 Psychology and Religion. 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. *Mr. G. Weaver.*

330 Psychology of Motivation.* F. 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. *Mr. G. Weaver.*

331 Psychology of Sensation and Perception.* F. A detailed examination of the theories and research pertaining to various sensory and perceptual processes in human beings. Methodological, physiological, and pretheoretical issues are addressed. Two-hour laboratory each week. Prerequisite: 151. *Staff.* Not offered 1982–83.

332 Psychology of Learning Processes.* F and S. A presentation of empirical strategies and theory formation in the area of the psychology of learning. The importance of learning theory for psychology in general is stressed. Two-hour laboratory each week. Prerequisite: 151. *Mr. R. Terborg.*

333 Physiological Psychology.* S. An intensive investigation of the physiological bases of behavior. Theories and research concerning the relationship between the

nervous system and several aspects of behavior will be discussed. Discussion of the mind/brain problem. Two hour laboratory each week. Prerequisite: 151. *Staff*.

334 Cognitive Psychology.* A survey of research and theory in the study of human thinking. The course covers the acquisition, representation, and use of knowledge with emphasis on the process of attention, memory, language, and problem solving. Prerequisite: 151. *Staff*.

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

395 Research Seminar.* F and S. The preparation, presentation, and discussion of papers based on current psychological literature and upon individual empirical research on selected topics. Prerequisite: 250. *Staff*.

GRADUATE COURSES

510 Educational Measurement. This course provides a theoretical and practical background which will enable classroom teachers to construct or select tests for specific purposes. It is designed to enable teachers to use test scores wisely and effectively in the learning process. A major paper requires knowledge and application of the concepts of reliability and validity as well as practical considerations in the evaluation of a standardized test of the student's choice. *Mr. A. Reynolds*.

511 Introduction to Guidance and Counseling. A survey of principles, major theories, and resources which shape guidance and counseling efforts in the schools. The course focus is on how a teacher can best contribute to and benefit from those efforts. *Mr. S. Stehouwer*.

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

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

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W10 Man: The Image of God. Implications for the Social Sciences. This course involves the study of the Biblical concept of *Man: The Image of God* following G.C. Berkouwer's book by that title. The implica-

tions of this vital doctrine for the social sciences will be persistently discussed, with emphasis on clarification and discussions of the logic. *Mr. W. Sanderson*.

W50 Psychology of Groups. An examination of the structures, processes, and performance of social groups. Attention will be given to group problem-solving, decision-making, communication, leadership, cooperation, and conflict. Lectures, group exercises, and films. Three tests and one written report. Prerequisite: 151. *Mr. M. Bolt*.

W51 The Psychology of the Human Infant. Infancy, from birth to fifteen to eighteen months of age, is viewed by many as the most critical segment of life, the period in which the basic frameworks for later development are established. This course will consider sensory, motor, perceptual, cognitive, social, and emotional aspects of infant development, and will use theory and research papers, demonstrations, and observations as resource materials. Prerequisite: two courses in psychology. *Mr. R. Stouwie*.

W52 To Punish or Not to Punish? An introduction to the topic of punishment and its use in suppressing undesirable behavior. Historically, this topic has been studied by learning psychologists (primarily in the animal laboratory) and developmental psychologists (who theorize about the role punishment plays in the socialization of children). Students will study both approaches as they relate to such punishment variables as severity, duration, timing, contingency, reasoning, schedules of presentation, and the nature of the punishing agent and will consider the side effects of punishment, and ethical and moral concerns about punishment, and possible alternatives to the use of punishment. Outside reading, a course paper or research project. Prerequisites: 151 and an interim psychology course. *Mr. R. Terborg*.

W53 Seminar in the Study of Emotion. Students will explore basic themes in the research and clinical study of emotion. Specific theoretical problems posed by the topic itself, major traditional and current approaches to such study, a working perspective, and an attempt at reconstruction will be covered by class lectures. A library research project with report. Prerequisite: one course in psychology. *Mrs. M. Vander Goot*.

W54 Knowing Yourself: The Psychology of Self Understanding. An introduction to

contemporary theories and research about how people come to know and evaluate themselves and how self-judgments influence our emotions, desires, and actions. What are the limits and distortions of self-understanding? Can one's self-concept be measured? How does the self-concept originate in development? How does self-understanding contribute to the way we deal with anxiety, depression, and pain? Class lectures, discussions of research, and a student project on personal self-understanding. Prerequisite: one course in psychology. *Mr. G. Weaver.*

W55 Psychopathology in Children/Psychotherapy with Children. This course is intended to be a review of theory, research, and technique in the development and remediation of emotional disorders in children. Students are expected to become well acquainted with childhood emotional disorders, their possible causes, and appropriate methods of treatment, and attempt to integrate these within the framework of the discipline of psychology and from a Christian perspective. Students will be expected to contribute informally in terms of class dis-

ussion, and formally, in terms of group projects to be presented in class. Topics covered by lectures, presentations, case studies, and demonstrations by the instructor, guests, and students are family therapy, play therapy, parents as therapists, and magic and ventriloquism in psychotherapy. Assigned readings, independent readings, one or more field trips to acquaint students with various child diagnostic and treatment settings, and an examination. Prerequisite: 151. *Mr. S. Stehouwer.*

W56 The Psychology of Close Personal Relationships. An investigation of our most personal relationships, those that are one-to-one, their initiation, their development, and their structure. This study of dyads involves lectures and discussions, the exploration of psychological literature and artistic media, and small group dynamics. Written work. Prerequisite: 151 or permission of the department. *Mr. L. Vande Voort.*

IDIS W13 Career Planning in a Christian Context, *Mr. W. Joosse.*

IDIS W56 Computer Applications in Modern Society, *Mr. A. Shoemaker.*

Religion and theology

*Professors W. De Boer (chairman), H. Hoeks, D. Holwerda, J. Primus, *G. Spykman, H. Vander Goot, C. Vos, L. Vos*

Associate Professor L. Sweetman

*Assistant Professor *P. Holtrop*

Instructor R. Van Leeuwen

THE DEPARTMENT offers a major in Religion and Theology, a minor in Church Education, a teaching minor in the Academic Study of Religions, and several other departmental minor programs.

The major program in Religion and Theology requires ten courses including 103 or 108, 206, 301, 303, and 396. An approved four-course sequence in another department is also required. Prerequisite to admission to the program is the completion of 103 or 108 with a minimum grade of C (2.0). The adviser for this program is the chairman.

The minor program in Church Education is for students preparing for the leadership of educational programs in churches. It requires Art 231 or Music 236, Psychology 151 and 201, 204, or 207, Religion 245, 246, and 319, and Sociology 311. This minor program may be taken with a Religion and Theological major pro-

gram. Students who plan to serve as directors of education in churches should do graduate work in Church Education. The adviser for this program is Mr. Henry Hoeks.

The teaching minor leading to certification in the Academic Study of Religions requires seven courses. All students complete a four-course sequence consisting of Religion and Theology 151, 305, 395, and Interdisciplinary 234. Three additional courses are chosen in consultation with the adviser of the program. Normally two courses are chosen from Philosophy 204, 205, 207, Religion and Theology 206, 207, 208, 301, 303, 308, 311, 313, 327, 328, and approved interim courses. One course, normally, is chosen from Art 231, Classics 231, History 201, 202, 203, 204, Sociology 217, 311. The adviser for this program is Mr. Henry Hoeks.

There are three other departmental minor programs. One in Biblical Studies requires five courses from 103 or 108, 207, 208, 302, 327, 328, plus another core course. The minor in Theological Studies requires five courses from 204, 206, 301, 303, 304, 308, 311, 312, 313, Idis 234, plus one Biblical Studies core course. The minor in Religion and Theological Studies requires 151 plus one course from each of the following categories: Biblical, Theological, Historical, Religiocultural, and Missions and World Religions. An appropriate interim course may be included in any of these programs with the approval of the chairman.

The core requirements in religion and theology are met by selecting one from the following courses in Biblical studies: 103, 108, 207, 208, 327, and 328, and one from the following courses in Theological, Historical, and Religio-cultural studies: 206, 301, 303, 304, 308, 311, and 312. Any departmental course except interims may be chosen by students electing a third core course in religion and theology.

BIBLICAL STUDIES

103 **Biblical Theology.** F and S, core. A study of the unfolding of the history of redemption as set forth within the historical framework of the Old Testament, intertestamentary, and New Testament eras. Biblical books and Apocryphal literature are analyzed and the major themes of Scripture are explicated. Students may not take this course and 108. Open only to freshmen and sophomores. *Staff.*

108 **New Testament Biblical Theology.** F and S, core. A more complete coverage of the biblical theology of the New Testament than can be offered in 103. Open only to freshmen and sophomores. *Staff.*

207 **Old Testament Prophets.** S, core. An intensive study of the place and role of the major and minor prophets in the Old Testament, the commentary they offer upon the history of redemption in Old Testament times, and an exploration of their basic themes and their continuing relevance. Not open to freshmen. *Staff.*

208 **New Testament Letters.** F, core. An intensive study of the place and role of the epistles in the canon of the New Testament, the doctrinal and ethical interpretations which these epistles give of the redemption portrayed in the Gospels, the light they shed on the early Christian Church, and their abiding relevance and significance. Not open to freshmen. *Staff.*

302 **Biblical Archaeology.*** S. A study of the pertinent archaeological data which provide a background for or throw light upon the biblical narrative. Prerequisite: one course in Biblical Studies and junior or senior standing. *Mr. B. Van Elderen.* Not offered 1982-83.

327 **Old Testament Interpretation.*** F, core. An intensive study of the basic principles and methods of biblical interpretation developed in the context of the biblical-theological themes of the Old Testament. Designed especially for departmental majors. Also open for core credit to juniors and seniors. *Mr. C. Vos.*

328 **New Testament Interpretation.*** S, core. An intensive study of the basic principles and methods of biblical interpretation developed in the context of the biblical-theological themes of the New Testament. Designed especially for departmental majors. Also open for core credit to juniors and seniors. *Mr. A. Thiselton.*

THEOLOGICAL STUDIES

206 **Reformation Theology.** F and S, core. A study of Christian doctrine as formulated in the Protestant Reformation and refined and elaborated by later Reformed theologians. Comparisons are drawn between the Reformed system and those of other branches of Christendom. Calvin's *Institutes of the Christian Religion* serves as a basic text. Not open to freshmen. *Staff.*

308 **Contemporary Theology.*** F, core. Selected writings of significant contemporary theologians are read and evaluated. Prerequisite: junior or senior standing. *Mr. D. Holwerda.*

312 **Early Christian Theology.*** S, core. A study of the growth of the church and its self-conscious commitment to an articulation of its faith; from the sub-apostolic age through St. Augustine. Development and growth of thought will be emphasized and selected writings of major theologians will be studied. Prerequisite: junior or senior standing. *Mr. G. Spykman.* Not offered 1982-83.

313 **Roman Catholic Theology.*** S. The development of Roman Catholic theology from the medieval era to present times, finding its climax in contemporary changes growing out of Vatican II. The Council of Trent, Counter-Reformation theology, papal encyclicals, Vatican I, and major schools of thought and shifting practices will be examined. Prerequisite: junior or senior standing. *Mr. G. Spykman.*

HISTORICAL STUDIES

303 **General Church History.*** S, core. A survey of the history of the Christian Church from its beginning to the present time, noting deviations from apostolic faith and practice, the interplay with the political, the great Church councils, the crises that emerge, divisions and reunions, and the confluence of forces that determine the complexion of the Christian Church today. Not open to freshmen. *Mr. F. Roberts.*

304 **American Religious History.*** F, core. A consideration of the religious history of our country from the immigration period to the present. Attention is paid to the European background, the early church beginnings in their diversity, the colonial era, the westward movement, current ecumenism, and the major social and political developments in their influence upon the American religious scene. Consideration will also be given to the historical antecedents and the development of the Christian Reformed Church in America. Not open to freshmen. *Mr. J. Primus.*

RELIGIO-CULTURAL STUDIES

Interdisciplinary 234 The Contemporary American Religious Situation may be applied to certain concentrations in this department.

301 **Christianity and Culture** (Studies in Calvinism).* F and S, core. An historically-oriented study of the Reformed Christian tradition in the Western world—its origin and development, its basic concepts and life-perspectives, its cultural impact and contemporary relevance. Not open to freshmen. *Staff.*

311 **Basic Christian Ethics.*** S, core. A biblical-theological study of moral issues, both personal and social, considering relevant ethical principles and practices as they developed in the Judeo-Christian tradition. *Mr. P. Holtrop.*

The following interdisciplinary course may be applied to certain concentrations in the department:

234 **The Contemporary American Religious Situation.** *Mr. J. Primus, Mr. W. Smit.*

MISSIONS AND WORLD RELIGIONS

203 **Theology of Mission.** F. A survey of biblical material pertaining to mission. These materials are used in evaluating the contemporary problems of mission: i.e., re-nascent non-Christian religions, ecumenism, mission in the ferment of social revolution. Not open to freshmen. *Mr. L. Sweetman.*

204 **History of Missions.** F. The record of missionary history through the ancient, medieval, and modern periods is examined with a view to ascertaining the principles that come to expression, the methods employed, the areas covered, the chief figures, and the measure of success or failure. In the

modern period the great missionary conferences of the twentieth century are analyzed and evaluated. Not open to freshmen. *Mr. L. Sweetman*. Not offered 1982-83.

305 **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 interpersonal and communal life, in cult, and in ideology. The study includes popular as well as official expressions of the religions. Not open to freshmen. *Mr. L. Sweetman*.

RELIGION AND EDUCATION

151 **Introduction to Religion Studies.** F. An introductory course appropriate to prospective teachers and required of those students who wish to minor in the Academic Study of Religions. This course deals critically with views of the origin, nature, and function of religions as they are found in the disciplines of cultural anthropology, the history and literature of religion, the phenomenology of religion, the psychology of religion, and the sociology of religion. This course also includes a study of the relevant Supreme Court decisions, a consideration of the problem of objectivity, an introduction to alternative pedagogical approaches to the study of religions, and an exposure to materials and media appropriate to teaching religion studies. *Mr. L. Sweetman*.

245 **Field Work in Church Education I.** F, half course. An introduction to the educational ministry of the church through field observations and practical experiences in a local Christian congregation, through readings which relate educational theory to the student's practical field experiences, and through weekly class sessions in which students report on their field experiences and integrate them with their readings. Not open to freshmen. *Mr. H. Hoeks*.

246 **Field Work in Church Education II.** S, half course. A continuation of 245, which is a prerequisite. *Mr. H. Hoeks*.

319 **Foundations of Religious Education.*** S. This course begins with an historical survey of informal and formal religious educational practices from early Hebrew times to those of contemporary North American homes, churches, and schools. The course proceeds to a consideration of some salient

socio-cultural, theological, and developmental considerations involved in religious education. Not open to freshmen. *Mr. H. Hoeks*.

390 **Independent Study.**

395 **Seminar: Religion and Education.*** F. A course for seniors in the Academic Study of Religions minor. It includes practical and bibliography work and concludes with a major research paper. *Mr. H. Hoeks*.

396 **Seminar: Religion and Theology.*** S. A course for senior majors in Religion and Theology which provides a focus on significant theological issues and on theological bibliography. A major research paper is required. *Mr. H. Vander Goot*.

GRADUATE COURSES

510 **Wisdom Literature.** An inquiry into the nature of wisdom literature with a major emphasis on Proverbs, Job, and Ecclesiastes with an introduction to the various approaches that have been taken in the interpretation of these books that is appropriate for teachers. Prerequisite: two courses in biblical studies beyond the 100-level or permission of the instructor. *Mr. R. Van Leeuwen*.

580 **Perspectives, Programs, and Practices in Bible and Religion Curriculum.** A study of various approaches in the schools to curriculum and teaching in biblical studies, church history, Reformed thought, and world religions. Consideration is given to the way fundamental differences of perspective on biblical Christianity influence the selection and use of curriculum designs, materials, and teaching techniques. Course content is adapted to the various grade levels of particular interest to enrollees. *Mr. H. Hoeks*.

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

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

JANUARY 1983 INTERIM

W10 **Thomas Merton: Man of Prayer, Writer, Social Critic.** A study of the spiritual pilgrimage of the late monk from the Abbey of Gethsemane in Kentucky, Thomas Mer-

ton. After an introduction to the contemplative tradition within Christian history, major emphasis will be on reading Merton (1915-1968) and working toward a Reformed view of spirituality. The course will include a one-week stay at the Abbey of Gethsemane in Trappist, Kentucky. Fee: approximately \$150. Off-campus. Permission of the instructor. *Mr. D. Cooper.*

W11 Between the Testaments. Turning just one page in the Bible turns over four hundred years of silence. This four hundred years was a period of political tumult for Palestine but it brought forth considerable theological development and literary production from the Jews. The student will study Jewish history, theology, and the literature (apocryphal and other writings) of this period and will seek to lay the background for understanding the New Testament. Readings, lectures, discussions, research in special areas, and short papers. *Mr. W. De Boer.*

W13 "The Women Should Keep Silence. . ." A course in Biblical interpretation using the single issue of women in church office as a case study. Biblical material is studied and interpretations are analyzed. Students will make critical evaluations of all aspects of Biblical interpretation from translation to application. *Mr. L. Vos.*

W50 Israel: Yesterday and Today. The course allows the student to examine the Israel of yesterday or the Israel of today and the possibility of a vital relationship between the two. Those who concentrate on the Israel of yesterday will make use of studies in archaeology, culture, history, geography, climate, etc. to illuminate the biblical narrative. Those who are concerned with the Israel of today will make a careful study of the present state of Israel, its birth, the forces that gave rise to its present form, and the contributions and problems it has created in the Near East and the world. The contextual aspect of both foci is a study of the history and geography of the area. The major part of the time will be spent in Israel where the libraries and teaching personnel of Hebrew and Arab universities (with all resources in English) are available. Students will also attend lectures in Egypt and Jordan, visit Bedouin families, and attend cultural events. A reading list for each of the foci will be available by May 15, 1982. Fee: approximately \$1,800. Prerequisite: a major (or substantial interest) in either religion, history, sociology, or political science and permission of the instructor. Off-campus. *Mr. C. Vos.*

IDIS W52 Radical Resocialization, Mr. L. Sweetman.

Sociology and social work

Professors G. De Blaeij, P. De Jong, H. Holstege, R. Houskamp, R. Rice, T. Rottman, W. Smit, D. Wilson

Associate Professors D. Smalligan (chairman), J. White

THIS DEPARTMENT OFFERS courses in both sociology and social work. Sociology is the study of the principles of group relationships, social institutions, and the influence of the group on the individual. Social Work is the study of the application of these principles and related theories to the helping professions. Courses in sociology may lead to a major and courses in social work may lead to a supplementary concentration in social work. A supplementary concentration in social work is open to both sociology and non-sociology majors.

The major concentration in sociology consists of 151, 318, 320, Mathematics 143, and five additional sociology courses, excluding 210. One interim course may be included among these five additional courses. Students who spend a semester at the Chicago Metropolitan Study Center may apply some of that work to a

departmental major. For admission to the major program, a student must complete 151 with a minimum grade of C (2.0).

The supplementary concentration in social work consists of six courses, five of which are drawn from the departmental offerings in social work. The supplementary concentration includes three types of courses: social work theory courses, field work courses, and other courses which most nearly complement the practice of social work. The program consists of 300, 301, 303, two units of credit from 307, 380, and 381 plus one additional course from selected psychology or sociology courses. An interim course may satisfy the elective requirement if approved by the social work advisor. A fuller description of the supplementary concentration in social work is available in the departmental office. The social work courses prepare one to work not only with individual clients in counseling situations but also to work in social institutions, and, when necessary, for change within these very institutions. Consequently this supplementary concentration prepares one to work in various capacities in both private and public organizations. All students in this concentration are required to have at least a hundred and fifty hours of field work placement. These placements are available with over fifty different private and governmental organizations.

The core requirement in sociology may be met by 151 or 217. Sociology 311 and 217 may be a part of the teaching minor in the academic study of religions.

SOCIOLOGY COURSES

151 Sociological Principles and Perspective. F and S, core. A general introduction to the discipline. Provides a brief theoretical and conceptual grasp of sociology as a body of knowledge dealing with group relationships as these affect both the individual and society. An attempt is made to articulate this knowledge and to demonstrate its use by showing how a sociological perspective offers a rational interpretation of issues current in our society. *Staff.*

210 Physical Anthropology. F. A critical analysis and evaluation of fossil man and human evolution. Various Christian positions regarding these issues will be examined. The issues in the present "creation-evolution controversy" will also be evaluated in the light of Scripture and the teachings of the church. *Mr. D. Wilson.*

301 Social Work Practice. S. Students are taught the techniques of social work with an emphasis on how basic social work concepts are related to professional practice. Prerequisite: 300 or permission of instructor. *Mr. R. Houskamp.*

302 Urban Sociology and Community Organization.* F and S. A descriptive and theoretical analysis of urban society and urban sub-communities. The emphasis is on urban processes and problems and sub-cultures

within the city as well as on such contemporary issues as community development and planning. *Mr. H. Holstege, Mr. J. White.*

304 The Family.* F and S. An intensive culturally comparative and historical analysis of the family as an institution. The contemporary courtship, marriage, and divorce patterns of the American family are also discussed. *Mr. H. Holstege, Mr. J. White.*

306 Sociology of Deviance.* F and S. An analysis of deviant behavior: its causes, manifestations, prevention, and programs of control. Special attention is given to the role of social norms in generating as well as controlling deviance. Emphasis is put on ways in which social structures generate and label deviance. Implications are drawn for various institutions, particularly the school and the church. *Mr. P. De Jong, Mr. T. Rottman.*

308 Population and Society.* S. 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.* 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. G. De Blacy.* Not offered 1982-83.

310 Social Psychology.* F. Human behavior is a consequence of man's psychological make-up and his socio-cultural environment. Attention is given to social interaction as it occurs in small group settings. Attention is also given to theoretical frameworks emphasizing self-concept and role playing. Students may not receive credit for this course and Psychology 310. *Mr. G. De Blacy.*

311 Sociology of Religion.* F. A study of the organizational forms of religion, with special attention being given to the influence and effectiveness of the church in its function as a social institution and to the social influences which have, in turn, affected the church. *Mr. W. Smit.*

312 The Sociology of Community.* S. A cross-cultural analysis of the changing nature of the community as a human ecological organization and as a structured system of status and power. Man's utopian dreams of ideal communities are contrasted with the types of communities actually found in primitive, agrarian, and industrial societies. Not offered 1982-83.

314 Contemporary Social Problems: Cultural and Social Responses to Death and Dying.* F. This course begins with a discussion of various theoretical orientations to the study of social problems generally. It then relates these theories to the particular problems associated with death and dying from the perspectives of contemporary culture and society, of those close to the dying person, and of the dying person himself. Special attention will be given to the extent to which the conceptions and customs surrounding death and dying are functional in their own terms and compatible with biblical norms. *Mr. T. Rottman.*

315 Sociology of Sport. S. A study of the social and social-psychological dynamics of sports in modern society. Areas receiving

special attention are youth sports, interscholastic sports, and professional sports. Emphasis is put on describing and understanding sports participants and observers and the relationship of sport as an institution to the rest of social structure. *Mr. G. De Blacy.*

317 Applied Anthropology. S. This course examines the application of anthropological principles to the topics of culture contact and cultural dynamics. Such applications require an extensive comparison of the various components of cultural systems and an analysis of the principles of cross-cultural communication. The areas of application include government, multinational corporations, peace corp, relief work, and Christian mission, with special emphasis given to the last two areas. Special topics include developing an appropriate attitude regarding indigenous culture and the management of culture shock.

318 Sociological Theory.* F. An assessment of sociological theory in terms of its historical development and current role in understanding human behavior. Particular attention is given to the function of theory in the research process. Direction is given to the student in the formulation of sociological hypotheses from data. Prerequisite: 151. *Mr. H. Holstege, Mr. T. Rottman.*

320 Sociological Research.* S. An assessment of the nature of the research process as applied to the study of theoretical problems in social science. 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. Prerequisites: 151, 318. *Staff.*

390 Independent Study.* F, I, S. Prerequisite: permission of the chairman and of the instructor. *Staff.*

395 Seminar.*

SOCIAL WORK COURSES

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.*

300 Social Welfare Policy and Services. F. An analysis of the social welfare system.

The institutions in which social welfare policy is carried out and specific policy areas which influence current social work services are examined. The application of specific policies to income maintenance, mental health, poverty programs, and corrections are some of the areas covered. Students who have taken 300 prior to September, 1980, should not take this course. Prerequisite: 151 or permission of instructor. *Mr. R. Houskamp.*

303 Child Welfare and Family Services.*

F. A study of social policy and service delivery in child welfare and family service agencies. Major topics include: a history of child welfare and family service policy in Europe and North America and the factors causing changes in these policies; a description and evaluation of the contemporary service delivery system and treatment methods; a study of unmet needs and present trends; and a sociological analysis of the relationship between the family, courts, politics, and contemporary American society. *Mr. J. Decker.*

307 The History of Social Welfare and Social Work.

F. A historical overview of the development of social welfare and social work, primarily in the United States. Included in the overview is a study of the social, cultural, political, and economic factors which have influenced the development of social welfare and the professionalization of social work. Prerequisite: 151 or permission of instructor. *Mr. R. Houskamp.*

380 Field Instruction in Social Agencies.

F and S. This field-based course provides a perspective on the various levels of intervention and types of services provided by social agencies. Each student will be assigned to work with a field instructor in a social agency. The college instructor, the student, and the field instructor will plan a program of involvement in the agency that will build on the student's previous instruction on campus and toward his career goals. Prerequisites: 300 and 301 or the permission of the instructor. *Mr. D. Smalligan.*

381 Practicum in Clinical Social Work.

S. This course provides an opportunity for the student to relate social work knowledge to a clinical setting. Various roles and modes of clinical social work are studied from a Christian perspective. The social worker's role is related to those of other professionals such as the psychiatrist, the clinical psychologist,

the adjunctive therapist, the psychiatric nurse, and the rehabilitation therapist and to the part each plays in the clinical team. Each student is assigned to a staff social worker who will supervise his direct work with patients. A student may not receive credit for this course and 380 or Psychology 315. Prerequisites: junior-senior standing, 300 and 301, and departmental approval. *Staff.*

GRADUATE COURSES

501 School in Community. A study of the reciprocal relationship between the school and the community. Particular attention is paid to the interrelationship between the school and religious, familial, political, and economic institutions. *Staff.*

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

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

JANUARY 1983 INTERIM

W10 Gerontology: A Study of Aging. This course is an analysis of the developing field of gerontology and includes a detailed discussion of the physiological and psychological characteristics of the aging process. In addition, students will examine substantive issues related to the needs of the elderly, such as social security, home and personal safety, housing, nutrition, legal information, recreation, transportation, tax rebates, and death and dying, as well as a discussion of the institutional interrelationships that affect the elderly and an analysis of the changes needed in American society to aid senior citizens. This class will meet occasionally with Speech W51. *Mr. H. Holstege.*

W15 The Planned Family. A study of some important decisions faced by people planning the size and composition of their families. Students will consider contraception, sterilization, abortion, artificial insemination, voluntary childlessness, adoption, and foster parenting. Readings and small group discussions on each topic and guest speakers from the community. Quizzes on readings, a log, and a paper. *Mr. P. De Jong*

W50 Christian Schools in Modern Society. Within the area of sociology of educa-

tion there is an increasing amount of literature on non-public schools and alternative education. Some of this literature deals with Christian schools and with Calvinistic Day Schools. Students will review and analyze a number of sociological investigations of Christian schools. The objectives are to add to our understanding of Christian schools themselves and how they operate in the larger society. They will be responsible for critiques and leading discussions on assigned articles. Open to juniors and seniors with an interest in Christian schools. *Mr. G. De Blaey.*

W51 Issues in Residential Group Child Care. Students will examine basic issues in residential group child care for delinquent and neglected children. Major topics are developmental planning to help children who are separated from their families, Erikson's developmental stages, the impact of separation on child, parents, and child care worker, the philosophy of several different programs, how children in care are encouraged to develop self-control and self-responsibility, and how child care workers develop group cohesion. An instructor from the Michigan Association of Children's Agencies training services will assist in the course. Prerequisite: junior or senior status in the social work supplementary con-

centration or permission of the instructor. *Mr. D. Smaligan.*

W52 Prison: A Problem or a Solution? Too frequently we assert that "prisons don't work" without paying careful attention to what they are expected to do. Nor is sufficiently careful attention given to possible alternatives, particularly those which are compatible with a Christian sociological perspective. Students will examine the impact that diverse images of man and society have had historically on the prison movement, the contemporary status of prisons, and specifically their relationship to philosophies of public safety, deterrence, rehabilitation, and moral retribution. They will consider possible alternatives to incarceration such as restitution, community service, and the like, and scrutinize the use and abuse of prosecutorial, judicial, and administrative discretion. Lectures, discussion, films, field visit(s). Quizzes and a paper. Permission of the instructor. *Mr. T. Rottman.*

IDIS W25 Africa: An Introduction for Non-Africans. *Mr. D. Wilson, Mr. J. Orkar.*

IDIS W57 Conducting the Helping Interview. *Mrs. S. Verwys, Miss S. De Waard.*

IDIS W58 Radical Resocialization. *Mr. R. Houskamp.*

Spanish

Associate Professors B. Class, E. Cortina (chairman)
Assistant Professors S. Ariza, Y. Byam

PROGRAMS FOR STUDENTS wishing to major in Spanish are worked out individually by the chairman. To be eligible a student must have completed at least two courses with a minimum average of C (2.0) and must have completed 101-102, 121-122, or the equivalent.

The typical major requires ten courses beyond 102 or 122 and must include 123, 201, or the equivalent, 215, 216, 217, 218, and four 300-level literature courses. Six course minors are also possible.

Teacher education majors require nine college-level courses including 215, 216, 217, 218, 360, and one from 371, 372, or an interim in Mexico or Spain. The minor requires six college-level courses and should include 215, 216, 217, and 218. Students in teacher education must pass a Spanish proficiency examination

before admission to directed teaching. The adviser for these programs is Mrs. Y. Byam.

Calvin-sponsored programs offered in conjunction with Universidad Iberoamericana are available in Mexico for the interim or a semester and similar programs are offered in Spain. Students interested in such programs should work out the details with the chairman and the registrar.

The fine arts core may be met by 217, 218, and 300-level literature courses.

LANGUAGE

101 **Elementary Spanish.** F. An introductory course in the use and comprehension of oral and written Spanish. *Staff.*

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

121-122-123. **Introductory and Intermediate Spanish.** F, I, S. A closely integrated sequence involving two semesters and the interim for students who have completed two years of high school Spanish but who, on the basis of a placement test, are not prepared for 201. The course is also open with the permission of the department to students in the teacher education programs who have had no foreign language in high school. *Staff.*

201 **Intermediate Spanish.** F. Review of essential grammatical structures and further training in spoken and written Spanish. Readings from significant Spanish authors. Prerequisites: 101 and 102 or other equivalents. *Staff.*

202 **Intermediate Spanish.** F and S. Continuation of 201. *Staff.*

215 **Advanced Grammar and Conversation.*** F. A course for the student who wishes to improve his facility in the language, who is preparing for graduate study, or who expects to teach Spanish. The course includes the intensive study of grammar, vocabulary, and idioms as well as intensive use of drills and exercises to develop competence in speaking and writing idiomatic Spanish. The emphasis is on improved pronunciation and fluency through conversation, debates, and oral presentations. Prerequisite: 202 or its equivalent. *Mrs. Y. Byam.*

216 **Advanced Composition and Translation.*** S. 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: 215 or approval of instructor. *Mrs. E. Cortina.*

LITERATURE

217 **Readings in Spanish Literature.** F. An introduction to the major writers and movements in Spanish literature from the Middle Ages to the present. Conducted in Spanish. Prerequisite: 202. *Mrs. S. Ariza.*

218 **Readings in Latin American Literature.** S. An introduction to the major writers and movements in Latin American literature from the New World conquest to the present day. Conducted in Spanish. Prerequisite: 202. *Mr. B. Class.*

303 **The Spanish Novel.** F. 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. *Mrs. S. Ariza.*

305 **Spanish Poetry.** F. 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. *Mr. B. Class.* Not offered 1982-83.

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. *Mr. B. Class.*

307 **The Latin American Novel.** S. 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. *Mr. B. Class.* Not offered 1982-83.

309 **Spanish Drama.** F. A study of the dramatic expression of Spain in the Golden Age and through the post-Civil War era. Conducted in Spanish. Prerequisite: 217. Mrs. E. Cortina. Not offered 1982-83.

CIVILIZATION

360 **Spanish-English Linguistics.** 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.

371 **Civilization of Spain.** S. A study of the non-literary expressions of the Spanish mind and culture, of the history of Spanish social, political, and religious institutions, and of current problems in Spanish life. The course complements and enriches literary studies. Conducted in Spanish. Prerequisite: 202 or the equivalent. Not offered 1982-83.

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. Mr. B. Class.

373 **Hispanic Culture in the United States.** A study of the history and culture of Hispanic groups in the United States, their political, social, and religious institutions, and their value systems. The course is planned to assist students in understanding the cultural contributions of each Hispanic

group within the broader American culture. Reading materials include literary and non-literary sources. Prerequisite: 202. Mrs. Y. Byam. Not offered 1982-83.

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

395 **Seminar.***

JANUARY 1983 INTERIM

W10 **Discovering the Baroque in Spanish America.** Students will visit the fascinating world of Baroque Spanish America by way of study of its poetry, church drama, art, architecture, music, physics, astronomy, and medical science. During the journey, they will discover the similarities between the worldviews of Baroque and twentieth century Spanish America. All readings are in English. Speakers and films complement readings and lectures. Class reports and presentation of course project on various aspects of Baroque Spanish American cultures. A reading list will be available before Christmas. Mr. B. Class.

W50 **Spanish Interim in Spain.** Students will spend four weeks in Spain. For the first two and a half weeks they will live with Spanish families and will study language and culture at the University of Caceres, Extremadura. The remaining time will be spent touring Seville, Madrid, Toledo, and Avila, visiting the major museums, galleries, and historic sites. Fee: approximately \$1,400. Satisfies departmental concentrations. Prerequisite: 201 or the equivalent and the permission of the instructor. Off-campus. Mrs. E. Cortina.

W52 **La Novela Picaresca Espanola.** This course is devoted to the genre of the Spanish picaresque novel, how it is to be defined, its origins, its unity, and how it fits into the historical and social conditions of sixteenth and seventeenth century Spain. Selections, principally from *Lazarillo de Tormes*, *Guzmán de Alfarache*, and *El Buscón*, are examined through careful reading and interpretation of texts. Satisfies departmental concentrations. Prerequisite: 217 and 218 or permission of the instructor. Mrs. S. Ariza.

Speech

Professors A. Noteboom, M. Vande Guchte

Associate Professors D. Holquist (chairman), J. Korf, Q. Schultze

Assistant Professor E. Boevé

PREREQUISITE TO A MAJOR is a minimum average of C (2.0) in one and one-half speech courses, one of which must be from the courses offered in Communication and Rhetoric. The major requires 200, 203, an interim, and five and one-half additional courses selected in consultation with a departmental adviser. Recommended cognates for students interested in oral interpretation and drama include aesthetics, history of art, introduction to musical literature, Shakespeare, and non-Shakespearean drama of the Renaissance; for those interested in speech education or speech correction, child psychology, psychology of exceptional children, descriptive statistics for the social sciences, and anatomy and physiology; for those interested in communications and rhetoric, cognate courses are chosen with the student's adviser.

Students wishing to concentrate in the theater program should take 200, 203, 217, 219, 317, an approved interim course, plus three courses selected from 304, 318, 319, and 220. Only one course credit of 220 may be counted toward a major.

The secondary school teaching major consists of 200, 203, 211, 217, 219, 230, plus three and a half other courses. The elementary school teaching major includes 203, 214, 215, 217, 219, plus four other courses. The six-course secondary school teaching minor should include 200, 203, 211, 217, 219, 230, plus a half course elective. The elementary school minor is 203, 214, 215, 219, and two electives. Only one course credit of 220 may be counted toward a concentration.

The departmental honors program requires honors registration in three speech courses other than 100 and 200 and the completion of 390 and 395 beyond the minimum eight and a half course major.

The college is a member of the Michigan Intercollegiate Speech League and students participate in debate tournaments, forensic contests, and an interpretative reading festival sponsored by the league.

The supplementary concentration in journalism and mass communication, a program involving the department, is described under the Department of English.

The core requirements in spoken rhetoric may be met by 100, 200; 214, if the student is in an elementary education program; 240; or by an examination, which presupposes formal and practical speech training in high school. The fine arts core requirement may be met by 203, 219, 304, 317, 318, 325, and 326.

COMMUNICATION AND RHETORIC

100 **Fundamentals of Oral Rhetoric.** F. and S, half course, core. The primary aim of this course is to increase competence in oral communication. The major emphasis is on

the composition and delivery of speeches. Students in elementary teacher education programs should take 214. *Staff.*

150 **Introduction to Communication Theory.** F. Study of the nature of human com-

munication, especially language. Communication theories derived from the humanities and social sciences are compared and evaluated. Topics include: language and culture, symbolic action, semantics, persuasion, dialogue, and language and thought. The moral and political natures of all communication are stressed throughout the course. A Christian view of communication is presented and analyzed. Students are expected to participate through group presentations and class discussions. *Mr. Q. Schultze.*

200 Advanced Oral Rhetoric. F and S, core. Composition and presentation of types of speeches, readings in rhetorical theory and criticism of selected contemporary speeches, types of discussion, and parliamentary law. Prerequisite: 100 or equivalent. *Staff.*

211 Debate. S, 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.* Not offered 1982-83.

230 Mass Communication. 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, and future developments. This course is both for students interested in media-related professions and for students wishing to deepen their understanding of the operation and effects of the media. *Mr. Q. Schultze.*

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

250 Semantics. S. Study of verbal and nonverbal symbols used in communication. Primary emphasis is on the effect of symbols. Major topics include relationships between symbols and referents and on problems in human communication. *Staff.* Not offered 1982-83.

305 Persuasion.* S. Communication as influence at intrapersonal, interpersonal,

group, mass, and cultural communication levels. Emphasis is on increased understanding and competence. Prerequisite: 100 or equivalent. Not offered 1982-83.

311 Argumentation.* F. Study of rational discourse and its uses. Methods of investigation, analysis, and the use of evidence and logic. Regular application of theory to the student's own communication is required. Not offered 1982-83.

312 Intercollegiate Debate. F and S, half course. Students involved in intercollegiate debate throughout the year should register for this course. Not more than two units of credit for such applied speech and music courses may be applied to the graduation requirements. Not offered 1982-83.

325 History of Rhetorical Theory.* F, core. Major issues in the history of oral rhetoric and communication. Classical, medieval, and early modern theories will be compared to twentieth century approaches. Theorists studied include Plato, Aristotle, Bacon, McLuhan, Burke, Goffman, and representatives of various contemporary schools. Not offered 1982-83.

326 History of Public Address.* F, core. Significant speeches are analyzed as communication arising out of a dynamic historical context. The role of speakers in the movements and controversies of their day is studied. Included are orators of the Bible such as Moses and Paul; speakers of Greece and Rome, such as Demosthenes and Cicero; preachers such as Chrysostom, Luther, Calvin, Beecher, Fosdick, Marshall, and Graham; political spokesmen such as Webster, Lincoln, Roosevelt, Hitler, and Churchill; and speakers for social reform such as Susan B. Anthony and Martin Luther King, Jr. *Staff.* Not offered 1982-83.

SPEECH EDUCATION AND SPEECH CORRECTION

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. *Staff.*

215 Introduction to Communication Disorders. F and S. A study of the child's speech development and the types of speech defects that may occur. The course is designed to help the classroom teacher un-

derstand and correct minor defects and to handle speech improvement in the classroom. The course will also serve to introduce the student to the profession of speech pathology and audiology. *Mr. M. Vande Guchte.*

307 Structures and Functions of the Speech Mechanisms. F. 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. *Mr. M. Vande Guchte.*

308 Basic Audiology and Audiometry. S. A study of the fundamental aspects of hearing: the physics of sound, the anatomy of the ear, the nature of hearing and hearing impairment, and the testing of hearing. Prerequisite: permission of instructor. *Mr. M. Vande Guchte.*

THEATER, DRAMA, 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, poetry, and drama. *Mr. D. Holquist, Mrs. A. Noteboom.*

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

219 Principles of Dramatic Productions. S. A study of the theories and principles of acting and directing. Students will read plays, attend lectures and demonstrations, and be required to demonstrate their competence in acting and directing. Prerequisite: 217 or permission of the instructor. *Mr. J. Korf.* Not offered 1982-83.

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

304 Advanced Interpretation. S, core. Continuation of 203. Application of its prin-

ciples to the novel and drama. Intensive study in preparation for a reading program. Prerequisite: 203. *Mrs. A. Noteboom.*

317 History of Theater and Drama. F, core. A historical and analytical study of theater and drama from its origins to 1800. *Mrs. E. Boevé.*

318 History of Theater and Drama. S, core. A continuation of 317. An historical and analytical study of theater and drama from 1800 to the present. *Mrs. E. Boevé.* Not offered 1982-83.

319 Design for Theater. S. A study of the theories and principles of theater design. This course builds on the principles taught in 219 and includes lectures, demonstrations, reading of plays, and the development of competence in set, light, costume, make-up, property, and publicity design. Prerequisites: 217, 219, or permission of instructor. *Mr. J. Korf.*

390 Independent Study.* F, I, S. Independent study of topics of interest to particular students, under the supervision of a member of the department. Prerequisite: permission of the department. *Staff.*

395 Seminar.* Research of an approved topic or topics under the supervision of a member of the department, and presentation of the results in a departmental seminar. Prerequisite: permission of the department. *Staff.*

JANUARY 1983 INTERIM

W10 Oral Reading of the Psalms. This course is designed to study selected psalms from the Bible as expressions of relationships that exist between the psalmist and his God. The details of how the language used embodies these relationships through the unity of idea, the variety present within this unity, the balance and proportion shown as emotions and intellect become involved and the progression (rhythm) of the whole will be examined. On the basis of these criteria, students will be given opportunities to match their own capacities of expression with the existing relationships of psalmist/God. A bibliography of required and suggested readings will be available to the students. Assignments will include solo and group oral readings plus short analysis papers on the psalms being read. The examination is an oral reading program built around a theme. *Mrs. A. Noteboom.*

W11 Popular Culture in Mass Media. A Christian critique of the forms of popular culture created and maintained through the American media. In what sense is media content art? Culture? What standards should the Christian use to evaluate media content? How might the media be employed to help fulfill the cultural mandate? Special emphasis is on broadcast entertainment, advertising, the news reports, and religious broadcasting. Essays, class discussions and presentations, readings from the popular press, and viewing of particular television programs. Syllabi available in December. *Mr. Q. Schultze.*

W51 Communication Disorders of Senior Citizens. The course is designed to acquaint students with communication disorders of older persons, a growing percentage of the United States population. They will survey the aging process and study the effects of

aging on speech/hearing mechanisms and processes. A detailed analysis will be made of the major communication disorders: aphasia, Parkinsonism, voice disorders, and hearing loss. Lectures and films will be supplemented by field trips bringing students into direct contact with older persons having such disorders, and with the professionals who provide rehabilitative services. Readings, observational reports, and a project. Parts of this course will be combined with Sociology W10: Gerontology: A Study of Aging. Any one prerequisite: 215, Sociology 151, Psychology 151, or permission of the instructor. *Mr. M. Vande Guchte.*

IDIS W26 Music Theater in America, *Mrs. E. Boevé.*

IDIS W54 Theater Interim in England: the Critic. *Mr. D. Holquist, Mr. J. Korf.*



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 Physical Education (I), James Timmer, *chairman*
 Physics (III), Roger Griffioen, *chairman*
 Political Science (IV), James De Borst, *chairman*
 Psychology (IV), Roger Stouwie, *chairman*
 Religion and Theology (I), Willis De Boer, *chairman*
 Sociology and Social Work (IV), Donald Smalligan, *chairman*
 Spanish (II), Elsa Cortina, *chairman*
 Speech (II), David Holquist, *chairman*

Faculty

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

EMERITI

- Josephine Baker, M.A., M.A.L.S.
Librarian, Emerita
- Henry Bengelink, M.S.
Assistant Professor of Biology, Emeritus
- Melvin E. Berghuis, M.A., Ph.D.
Professor of Speech, Emeritus
- Nicholas Henry Beversluis, Th.B., Th., M.A., Ed.D.
Professor of Education, Emeritus
- Clarence Boersma, M.A., M.A., Ph.D.
Professor of Germanic Languages, Emeritus
- Bert Peter Bos, M.A., Ed.D.
Director of Teacher Certification, Emeritus
- John Harold Bratt, Th.B., Th.M., S.T.M., T.D.
Professor of Religion and Theology, Emeritus
- John Thomas Daling, M.A., Ph.D.
Professor of Psychology, Emeritus
- John Lester De Beer, M.A., Ed.D.
Professor of Education, Emeritus
Director of the Instructional Resources Center
- John De Bie, M.A.
Assistant Professor of History, Emeritus
- James John De Jonge, M.S., M.Mus.
Associate Professor of Music, Emeritus
- Theodora P. Dirkse, M.A., Ph.D.
Professor of Chemistry, Emeritus
- Bernard Jay Fridsma, Sr., M.A., Ph.D.
Professor of Germanic Languages, Emeritus
- Harold Paul Geerdes, M.Ed.
Associate Professor of Music, Emeritus
- James P. Hoekenga, M.A.
Executive Director of Alumni Relations, Emeritus
- Winifred H. Holkeboer, M.A.
Associate Professor of English, Emerita
- Martin Karsten, M.S.
Associate Professor of Biology, Emeritus
- Cornelius A. Plantinga, M.A., M.Ed., Ph.D.
Professor of Psychology, Emeritus
- William Thomas Radius, M.A., Ph.D.
Professor of Classical Language, Emeritus
- H. Evan Runner, Th.B., Th.M., D.Phil.
Professor of Philosophy, Emeritus

William Spoelhof, M.A., Ph.D., LL.D., Litt.D., D.H.L.

President, Emeritus

Barney Steen, Ed.D.

Professor of Physical Education, Emeritus

John Johnson Timmerman, M.A., Ph.D.

Professor of English, Emeritus

John Vanden Berg, M.A., Ph.D.

Vice President for Academic Administration, Emeritus

Gertrude Vander Ark, M.A., Ed.S.

Assistant Professor of Education, Emerita

Helen Van Laar, M.A.

Assistant Professor of Education, Emerita

Harry J. Wassink, B.S.

Professor of Engineering, Emeritus

Enno Wolthuis, M.S., Ph.D.

Professor of Chemistry, Emeritus

G. Roderick Youngs, Th.B., M.A., Ed.D.

Professor of Psychology, Emeritus

Sydney T. Youngsa

Assistant to the President, Emeritus

Mildred Reitsema Zylstra, M.A.L.S.

Assistant Professor of English, Emerita

ACTIVE

Henry Aay, Ph.D. (Clark, 1978)

Associate Professor of Physics (Environmental Studies and Geography)

Robert J. Albers, Ph.D. (Connecticut, 1962)

Professor of Chemistry

Sandra Kay Ariza, M.A. (Michigan State, 1974)

Assistant Professor of Spanish

Anton Armstrong, M.M. (Illinois, 1980)

Visiting Instructor in Music

Martinus A. Bakker, M.A. (University of South Africa, 1967), Drs. (Utrecht State University, 1977)

Associate Professor of Germanic Languages

†Claude-Marie Baldwin, M.A. (Michigan State, 1977)

Visiting Associate Professor of French

Henry James Baron, M.A. (Michigan, 1966), Adv. Cer., Ph.D. (Illinois, 1968, 1972)

Professor of English

**John D. Beebe, M.A. (South Dakota, 1966), Ph.D. (Chicago, 1970)

Professor of Biology

Eric H. Beversluis, M.A., Ph.D. (Northwestern, 1968, 1970)

Associate Professor of Economics

Ronald Lee Blankespoor, Ph.D. (Iowa State, 1971)

Professor of Chemistry

Kathryn Blok, M.A., M.A., Ed.S., Ph.D. (Michigan State 1967, 1975, 1981)

Visiting Associate Professor of Education

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

Edgar Gene Boevé, J. Franklin School of Professional Arts, M.S.D. (Michigan 1954)

Professor of Art

- Ervina Boevé, M.A. (Michigan, 1954)
Assistant Professor of Speech
- T. Macyn Bolt, M.F.A. (Syracuse, 1981)
Instructor in 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 Bonzelar, M.A. (Western Michigan, 1964)
Assistant Professor of Art
- Paul H. Boonstra, M.A. (Michigan, 1958), M.S. (Purdue, 1963), Ph.D. (Michigan State, 1970)
Professor of Mathematics
- Bette DeBruyn Bosma, M.A., Ph.D. (Michigan State, 1972, 1981)
Associate Professor of Education
- James Peter Bosscher, M.A. (Purdue, 1957), Ph.D. (Michigan 1968)
Professor of Engineering
Chairman of the Department of Engineering
- Hessel Bouma III, Ph.D. (Texas, 1975)
Associate Professor of Biology
- Al Dirk Bratt, M.S. (Michigan State, 1957), Ph.D. (Cornell, 1964)
Professor of Biology
- Kenneth Dale Bratt, M.A. (Princeton, 1973)
Assistant Professor of Classical Languages
- Wallace Henry Bratt, M.A., Ph.D. (Michigan 1956, 1966)
Professor of Germanic Languages
- Daryl Myron Brink, M.A. (Western Michigan, 1968), Ph.D. (Michigan State, 1972)
Associate Professor of Mathematics and Computer Science
- John Harvey Brink, M.S., Ph.D. (Purdue, 1972, 1974)
Professor of Psychology
- Herbert John Brinks, M.A., Ph.D. (Michigan, 1961, 1965)
Professor of History
Curator, Colonial Origins Collection
- Herman H. Broene, Ph.D. (Purdue, 1947)
Professor of Chemistry
- Virginia Bullock, M.A. (Michigan State, 1978)
Visiting Instructor in Art
- Conrad John Bult, M.A., M.A.L.S. (Michigan, 1962, 1965)
Assistant Library Director for College Related Matters
- Marjorie J. Bultje, M.S.E. (University of Michigan, 1980)
Instructor in Computer Science
- Linda Burden, B.S. (Western Michigan University, 1977), M.S.N. (Wayne State University, 1979)
Adjunct Instructor in Nursing
- Ynés M. Byam, M.A. (Michigan State University, 1977)
Assistant Professor of Spanish
- Barbara Carvill, Ph.D., (Toronto, 1981)
Associate Professor of Germanic Languages
Chairman of the Department of French
- James A. Clark, M.A., Ph.D. (Colorado, 1974, 1977)
Visiting Assistant Professor of Physics (Geology)
- Bradley Mellon Class, M.A. (Oregon, 1967), Ph.D. (New Mexico, 1974)
Associate Professor of Spanish
- Dale Jay Cooper, B.D. (Calvin Theological Seminary, 1968)
College Chaplain

- John W. Cooper, M.A., Ph.D. (Toronto, 1974, 1978)
Assistant Professor of Philosophy
- Elsa Cortina, Doctora en Pedagogia (Universidad Habana, 1951), M.A. (Michigan State University, 1977)
Associate Professor of Spanish
Chairman of the Department of Spanish
- Gordon Lee De Blaeij, M.A., Ph.D. (Western Michigan, 1967, 1970)
Professor of Sociology
- Marilyn E. De Boer, M.S.W. (Denver, 1972)
Dean of Women
- Peter Pousma De Boer, M.A., Social Studies (New Jersey State, 1952), M.A., English-American Civilization (Iowa, 1961), Ph.D. (Chicago, 1968)
Professor of Education
- Willis Peter De Boer, Th.B. (Calvin Theological Seminary, 1951), D.Th. (Vrije Universiteit, Amsterdam, 1962)
Professor of Religion and Theology
Chairman of the Department of Religion and Theology
- James Henry De Borst, M.A., Ph.D. (Michigan, 1965, 1972)
Professor of Political Science
Chairman of the Department of Political Science
- Peter Ymen De Jong, M.A., Ph.D. (Western Michigan, 1969, 1972)
Professor of Sociology
- †Roger Lee De Kock, Ph.D. (Wisconsin, 1969)
Professor of Chemistry
- Leon W. De Lange, M.B.A. (Central Michigan, 1970), C.P.A.
Associate Professor of Economics and Business
- John A. Dersch, M.S. (Michigan State, 1980)
Visiting Instructor in Mathematics
- Peter Allen De Vos, M.A., Ph.D. (Brown, 1964, 1972)
Professor of Philosophy
Provost
- Bert De Vries, B.D. (Calvin Theological Seminary, 1964), M.A., Ph.D. (Brandeis, 1965, 1967)
Professor of History
Chairman of the Department of History
- **Robert Lee De Vries, M.A., Ph.D. (Michigan, 1964, 1974)
Associate Professor of Political Science
- Henry De Wit, M.B.A. (Michigan, 1948), C.P.A.
Vice President for Business and Finance
- Derald Dwight De Young, M.M. (Eastman, 1965), Ph.D. (Minnesota, 1975)
Visiting Associate Professor of Music
- Anthony J. Diekema, M.A., Ph.D. (Michigan State University, 1958, 1965)
President
- **David James Diephouse, M.A., Ph.D. (Princeton, 1971, 1974)
Associate Professor of History
- Evelyn J. Diephouse, M.Ed. (Rutgers, 1976)
Director of Academic Support Program
- John W. Dodge, M.A., Ph.D. (Wisconsin, 1974, 1981)
Assistant Professor of Economics
- Cloe Ann Danford, M.S. (Colorado, 1975)
Assistant Professor of Nursing
- †Eugene Roy Dykema, M.B.A. (Chicago, 1968)
Assistant Professor of Economics
- Johanna Duyst, M.A.L.S. (Michigan, 1973)
Librarian

- Daniel Marcus Ebels, M.S. (Wisconsin, 1975)
Assistant Professor of Economics
- Vernon James Ehlers, Ph.D. (California, Berkeley, 1960)
Professor of Physics
- Edward E. Ericson, Jr., M.A., Ph.D. (Arkansas, 1963, 1967)
Professor of English
- Catherine Gallouët-Schutter, M.A. (Rutgers, 1974)
Visiting Instructor in French
- Alan Irwin Gebben, M.A.T. (George Peabody and Vanderbilt, 1955), M.S., Ph.D. (Michigan, 1959, 1965)
Professor of Biology
Chairman of the Department of Biology
- Samuel Everett Greydanus, Jr., M.A. (Edinburgh, 1951)
Assistant Professor of History
- Roger Duane Griffioen, Ph.D. (Purdue, 1960)
Professor of Physics
Chairman of the Department of Physics
- John Edward Hamersma, S.M.M., S.M.D. (Union Theological Seminary, New York, 1952, 1961)
Professor of Music
College Organist
- George Graham Harper, Jr., M.A., Ph.D. (Northwestern, 1951, 1959)
Professor of English
- George Harris, M.A. (Michigan, 1959), Ph.D. (Northwestern, 1971)
Professor of Classical Languages
Chairman of the Department of Classical Languages
- Cornelius Peter Hegewald, M.A., D.A.G. (Michigan State, 1964, 1967)
Associate Professor of Germanic Language
Chairman of the Department of Germanic Languages
- William Cornelius Hendricks, M.Ed. (Western Washington State, 1955)
Assistant Professor of Education
Coordinator of Elementary Education
- Henry Jay Hoeks, B.S.A.E. (Purdue, 1958), M.C.E. (Western Theological Seminary, 1966)
Ed.D. (Columbia, 1975)
Professor of Religion and Theology
Director of the Academic Study of Religions Program
- David Hoekema, Ph.D. (Princeton, 1981)
Visiting Fellow, Calvin Center for Christian Scholarship
- †Robert James Hoeksema, M.S.E. (Michigan, 1978)
Instructor in Engineering
- Thomas Brian Hoeksema, M.A., Ph.D. (Michigan State, 1972, 1975)
Associate Professor of Education
Coordinator of Special Education: Mentally Impaired
- James M. Hollebeek, M.A., M.A. (Western Michigan, 1974, 1976)
Counselor in the Broene Center
- David Jack Holquist, M.A. (Michigan, 1967), Ed.S. (Michigan State, 1974)
Associate Professor of Speech
Chairman of the Department of Speech
- Henry Holstege, Jr., M.A., Ph.D. (Michigan State, 1958, 1966)
Professor of Sociology
- Philip Cornelius Holtrop, B.D. (Calvin Theological Seminary, 1958)
Assistant Professor of Religion and Theology
- David Earl Holwerda, B.D. (Calvin Theological Seminary, 1956), D.Th. (Vrije Universiteit, Amsterdam, 1959)
Professor of Religion and Theology

- Ralph John Honderd, M.A. (Michigan State, 1966)
Assistant Professor of Physical Education
- Donald R. House, M.B.A. (University of Michigan, 1952)
Assistant Professor of Economics and Business
- Richard Edwin Houskamp, M.S.W. (Chicago, 1961), D.S.W. (Tulane, 1976)
Professor of Sociology
- Carl John Huisman, M.F.A. (Michigan State, 1967)
Associate Professor of Art
- Gertrude Ann Huizenga, M.A. (Ohio State, 1963), M.Mus., Ph.D. (Michigan State, 1969, 1980)
Associate Professor of Music
- **Henry Peter Ippel, M.A., Ph.D. (Michigan, 1948, 1957)
Professor of History
- †Thomas Leigh Jager, M.S., Ph.D. (Chicago, 1967, 1971)
Professor of Mathematics
- Robert Andrew Jensen, M.F.A. (Ohio, 1962)
Associate Professor of Art
Chairman of the Department of Art
- Anamarie L. Joosse, M.A., Ed.S. (Michigan State, 1971, 1972)
Counselor in the Broene Center
- Wayne George Joosse, M.A., Ph.D. (Michigan State, 1965, 1975)
Professor of Psychology
- Carl William Kaiser, M. Mus. (Catholic University, 1961)
Associate Professor of Music
- Corrine K. Kass, M.A. (Michigan, 1955), Ph.D. (Illinois, 1962)
Professor of Education
Coordinator of Special Education: Learning Disabilities
- Thomas D. Kennedy, Ph.D. candidate (Virginia)
Visiting Instructor in Philosophy
- Cynthia E. Kielinen, M.S. (Boston University School of Nursing, 1972), Ed.D. (Columbia University, 1979)
Visiting Associate Professor of Nursing
Chairman of the Hope-Calvin Department of Nursing
- Beverly Jane Klooster, M.S., Ph.D. (Michigan State, 1961, 1972)
Professor of Biology
Director of Health Sciences Programs
- Kenneth J. Konyndyk, Jr., M.A., Ph.D. (Wayne State, 1967, 1970)
Professor of Philosophy
Chairman of the Department of Philosophy
- James Dale Korf, M.A. (Michigan, 1970)
Associate Professor of Speech
- Irvin Bertus Kroese, M.A., Ph.D. (Ohio, 1964, 1966)
Professor of English
- Albion Jerome Kromminga, Ph.D. (Minnesota, 1961)
Professor of Physics
- Kenneth Wayne Kuiper, M.A., Educ., M.A., English, Ed.D. (Michigan, 1955, 1959, 1963)
Professor of English
Chairman of the Department of English
- James Alan Kuiper, M.F.A. (Michigan State, 1976)
Assistant Professor of Art
- Jack Kuipers, M.S.E., Info. and Cont. E. (Michigan 1959, 1966)
Associate Professor of Mathematics
- Kenneth Jay Kuipers, M.B.A. (Michigan State, 1968)
Associate Professor of Economics and Business
Chairman of the Department of Economics and Business

- Walter Lagerwey, M.A. (Columbia, 1951), Ph.D. (Michigan, 1958)
Professor of Germanic Languages
Chairman of the Department of Economic and Business
- Stephen Lambert Lambers, M.A., M.A.L.S. (Michigan, 1958, 1969)
Librarian
- James Lawrence Lamse, M.A., Ph.D. (Michigan, 1963, 1975)
Professor of Germanic Languages
- Arie Leegwater, Ph.D. (Ohio State, 1967)
Professor of Chemistry
- Sanford Clay Leestma, M.A. (Pennsylvania State, 1965), Ph.D., (New Mexico State, 1969)
Professor of Mathematics and Computer Science
- Philip Roger Lucasse, M.A., Ph.D. (Michigan, 1952, 1971)
Professor of Education
Chairman of the Department of Education
- Roger Lundin, M.T.S. (Gordon-Conwell, 1974), M.A., Ph.D. (Connecticut, 1976, 1979)
Visiting Fellow, Calvin Center for Christian Scholarship
- Thomas J. Manson, B.S. (University of Michigan, 1973), M.S. (University of Utah, 1977)
Adjunct Assistant Professor of Nursing
- *George Mish Marsden, B.D. (Westminster Theological Seminary, 1963), M.A., Ph.D. (Yale, 1961, 1965)
Professor of History
- Jean E. Martin, B.S.N. (University of Michigan, 1968), M.S. (Boston University, 1969)
Adjunct Assistant Professor of Nursing
- Larry F. Mehne, Ph.D. (Pennsylvania, 1976)
Visiting Assistant Professor of Chemistry
- Gregory Frank Mellema, Ph.D. (Massachusetts, 1974), M.B.A. (Michigan, 1978)
Associate Professor of Philosophy
- Clarence Menninga, M.A. (Western Michigan, 1959), Ph.D. (Purdue, 1966)
Professor of Physics (Geology)
- Nancy L. Meyer, M.S. (Arizona, 1979)
Instructor in Physical Education
- Charles J. Miller, Ph.D. (Northwestern, 1947)
Dean for Academic Administration
- Ellen Borger Monsma, M.A. (Indiana, 1968)
Assistant Professor of French
- George Norman Monsma, Jr., M.A., Ph.D. (Princeton, 1965, 1969)
Professor of Economics
- Marvin Eugene Monsma, M.A. (Michigan State, 1961), M.A.L.S. (Michigan, 1967)
Director of the Library
- *Richard John Mouw, M.A. (Alberta, 1965), Ph.D. (Chicago, 1971)
Professor of Philosophy
- Carl Thomas Mulder, M.A., Ed.D. (Western Michigan, 1964, 1971)
Professor of Education
Coordinator of Middle School Education
- Merle Mustert, M.M. (Michigan State University, 1964)
Assistant Professor of Music
- Ann Janssen Noteboom, M.A., Ph.D. (Northwestern, 1952, 1957)
Professor of Speech
- *Larry Ray Nyhoff, M.A. (Michigan, 1961), Ph.D. (Michigan State, 1969)
Professor of Computer Science
- *Donald Oppewal, M.A. (Michigan, 1951), Ph.D. (Illinois, 1961)
Professor of Education
- Peter Oppewal, M.A., Ph.D. (Michigan, 1949, 1961)
Professor of English

- John N. Orkar, Ph.D. (Dalhousie, 1979)
Multicultural Lecturer
- *Clifton James Orlebeke, B.S.E., M.A. (Michigan, 1947, 1950), Ph.D. (Harvard, 1963)
Professor of Philosophy
- Arthur James Otten, M.A., D. de l'U. (Laval, 1951, 1969)
Professor of French
- Charlotte Otten, M.A (Michigan, 1969), Ph.D. (Michigan State, 1971)
Professor of English
- Robert Theodore Otten, M.A., Ph.D. (Michigan, 1951, 1957)
Professor of Classical Languages
Secretary of the Faculty
- Chris Stoffel Overvoorde, M.F.A. (Michigan, 1966)
Associate Professor of Art
- Thomas J. Ozinga, M.A., Ph.D. (Michigan, 1961, 1967)
Director of College Relations
- Bernard Edward Pekelder, Th.B. (Calvin Theological Seminary, 1947), M.A. (Northwestern, 1965)
Vice President for Student Affairs
College Chaplain
- James Michael Penning, M.A., Ph.D. (Kentucky, 1974, 1975)
Associate Professor of Political Science
- Kirk D. Peterson, M.S.E. (Michigan, 1979)
Instructor in Engineering
- Jeffrey Robert Pettinga, M.A. (Michigan State, 1968)
Associate Professor of Physical Education
- Kenneth Piers, B.Sc. hons. Ph.D. (Alberta, 1963, 1966)
Professor of Chemistry
Chairman of the Department of Chemistry
- †Alvin Carl Plantinga, M.A. (Michigan, 1955), Ph.D. (Yale, 1958)
Professor of Philosophy
- John Henry Primus, B.D. (Calvin Theological Seminary, 1957), D.Th. (Vrije Universiteit, Amsterdam, 1960)
Professor of Religion and Theology
- Donald E. Pruis, M.B.A. (Michigan, 1953), C.P.A.
Professor of Economics and Business
- Delvin L. Ratzsch, M.A., Ph.D. (Massachusetts, 1974, 1975)
Associate Professor of Philosophy
- Alfred John Reynolds, M.A. (Michigan, 1951), Ph.D. (Michigan State, 1965)
Professor of Psychology
- Rodger Reid Rice, M.A., Ph.D. (Michigan State, 1962, 1968)
Professor of Sociology
Dean for the Social Sciences and for Language, Literature, and Arts
- M. Howard Rienstra, M.A., Ph.D. (Michigan, 1954, 1963)
Professor of History
- Dale R. Rietberg, M.B.A. (Michigan, 1980)
Instructor in Economics
- Frank Carl Roberts, B.D. (Calvin Theological Seminary, 1965), M.A., Ph.D. (Vanderbilt, 1969, 1973)
Professor of History
- Shirley J. Roels, M.B.A. (Michigan, 1977)
Instructor in Economics and Business
- Theodore Allen Rottman, M.A., Ph.D. (Michigan State, 1955, 1965)
Professor of Sociology
- †Ruth K. Rus, M.Mus. (Eastman School of Music, 1951)
Associate Professor of Music

- William A. Sanderson, B.D., S.T.M. (Faith Theological Seminary, 1950), M.A. (Washington, St. Louis, 1965)
Associate Professor of Psychology
- Timothy Schipper, M.S.E.S. candidate (Michigan)
Visiting Instructor in Engineering
- Quentin J. Schultze, M.S., Ph.D. (Illinois, 1976, 1978)
Associate Professor of Speech
- Carl James Sinke, M.S., Ph.D. (Purdue, 1951, 1954)
Professor of Mathematics
Chairman of the Department of Mathematics
- Allen L. Shoemaker, M.S., Ph.D. (Illinois, 1979, 1980)
Assistant Professor of Psychology
- Raymond L. Slager, M.S. (Western Michigan, 1970), C.P.A., 1974
Assistant Professor of Economics and Business
- Howard Jay Slenk, M.A., Ph.D. (Ohio State, 1961, 1965)
Professor of Music
Chairman of the Department of Music
- Barbara Betty Sluiter, M.A.L.S. (Michigan, 1956)
Librarian
- Donald Henry Smalligan, M.B.A., M.S.W. (Michigan, 1948, 1954)
Associate Professor of Sociology
Chairman of the Department of Sociology
- Corwin Esdert Smidt, M.A., Ph.D. (Iowa, 1971, 1975)
Associate Professor of Political Science
- J. William Smit, M.A., Ph.D. (Michigan, 1959, 1964)
Professor of Sociology
- Cynthia J. Smith, M.S. (Michigan State, 1982)
Instructor in Computer Science
- John Nelson Snapper, M.A., M.A. (San Diego State, 1971, English, 1974, education)
Assistant Professor of English
- *Gordon John Spykman, Th.B. (Calvin Theological Seminary, 1952), D.Th. (Vrije Universiteit, Amsterdam, 1955)
Professor of Religion and Theology
- Calvin Ray Stapert, M.A., Ph.D. (Chicago, 1968, 1973)
Professor of Music
- R. Scott Stehouwer, M.A., Ph.D. (Wayne State, 1977, 1978)
Associate Professor of Psychology
- LeRoy Dale Stegink, M.A., Ph.D. (Michigan State, 1970, 1979)
Associate Professor of Education
Coordinator of Secondary Education
- Michael J. Stob, M.S., Ph.D. (University of Chicago, 1975)
Assistant Professor of Mathematics and Computer Science
- William K. Stob, B.D., Th.M. (Calvin Theological Seminary, 1955, 1970), Ed.D. (Western Michigan, 1975)
Dean of Student Life
- Roger John Stouwie, M.A., Ph.D. (Wisconsin, 1968, 1970)
Professor of Psychology
Chairman of the Department of Psychology
- Charles Earl Strikwerda, M.A. (Wisconsin, 1969), Ph.D. (Kentucky, 1977)
Associate Professor of Political Science
- Leonard Sweetman, Jr., Th.B. (Calvin Theological Seminary, 1951)
Associate Professor of Religion and Theology
- Bernard John Ten Broek, M.A., Ph.D. (Colorado, 1955, 1960)
Professor of Biology

- *Henrietta Ten Harmsel, M.A., Ph.D. (Michigan, 1958, 1962)
Professor of English
- Robert Harold Terborg, M.A., Ph.D. (Michigan State, 1966, 1968)
Professor of Psychology
- Anthony C. Thiselton, M.Th. (London, 1964), Ph.D. (Sheffield, 1977)
Visiting Fellow, Calvin Center for Christian Scholarship
- Richard Robert Tiemersma, M.A., Ph.D. (Northwestern, 1950, 1962)
Professor of English
- John Peter Tiemstra, Ph.D. (Massachusetts Institute of Technology, 1975)
Assistant 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
Chairman of the Department of Physical Education
- John Hager Timmerman, M.A., Ph.D. (Ohio University, 1971, 1973)
Professor of English
- G. Dale Topp, M.Mus., Ph.D. (Michigan, 1960, 1967)
Professor of Music
- David Bruce Tuuk, M.A. (Michigan, 1950)
Assistant Professor of Physical Education
- **Glen E. Van Andel, M.S. (North Carolina, 1969)
Associate Professor of Physical Education
- David Alan Van Baak, M.A., Ph.D. (Harvard, 1975, 1979)
Associate Professor of Physics
- Randall Van Dragt, M.S. (Cornell University, 1971)
Instructor in Biology
- Marten Vande Guchte, M.Ed. (Wayne State, 1954), Ph.D. (Michigan State, 1969)
Professor of Speech
- 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)
Assistant Professor of English
- Henry Vander Goot, M.Div. (Princeton Theological Seminary, 1971), M.A., Ph.D. (St. Michael's College, University of Toronto, 1973, 1976)
Professor of Religion and Theology
- Mary Elizabeth Vander Goot, M.A., Ph.D. (Princeton, 1969, 1971)
Professor of Psychology
- Evert Van Der Heide, M.A. (Wayne State, 1975)
Assistant Professor of Economics and Business
- Steven John Van Der Weele, M.S., Ph.D. (Wisconsin, 1950, 1955)
Professor of English
- William Van Doorne, M.S., Ph.D. (Michigan, 1962, 1965)
Professor of Chemistry
- Gordon Lee Van Harn, M.S., Ph.D. (Illinois, 1959, 1961)
Professor of Biology
Dean for the Natural Sciences and Mathematics and for the Contextual Disciplines
- Dale Kenneth Van Kley, M.A., Ph.D. (Yale, 1964, 1970)
Professor of History
- *Edwin John Van Kley, M.A., Ph.D., (Chicago, 1959, 1964)
Professor of History
- Raymond C. Van Leeuwen, M.A. (St. Michael's, 1973), B.D. (Calvin Theological Seminary, 1976)
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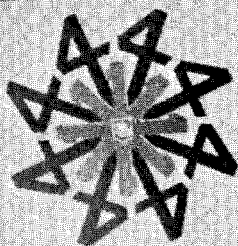
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