
Calvin College

The college of the Christian Reformed Church

The catalog for 1983-84

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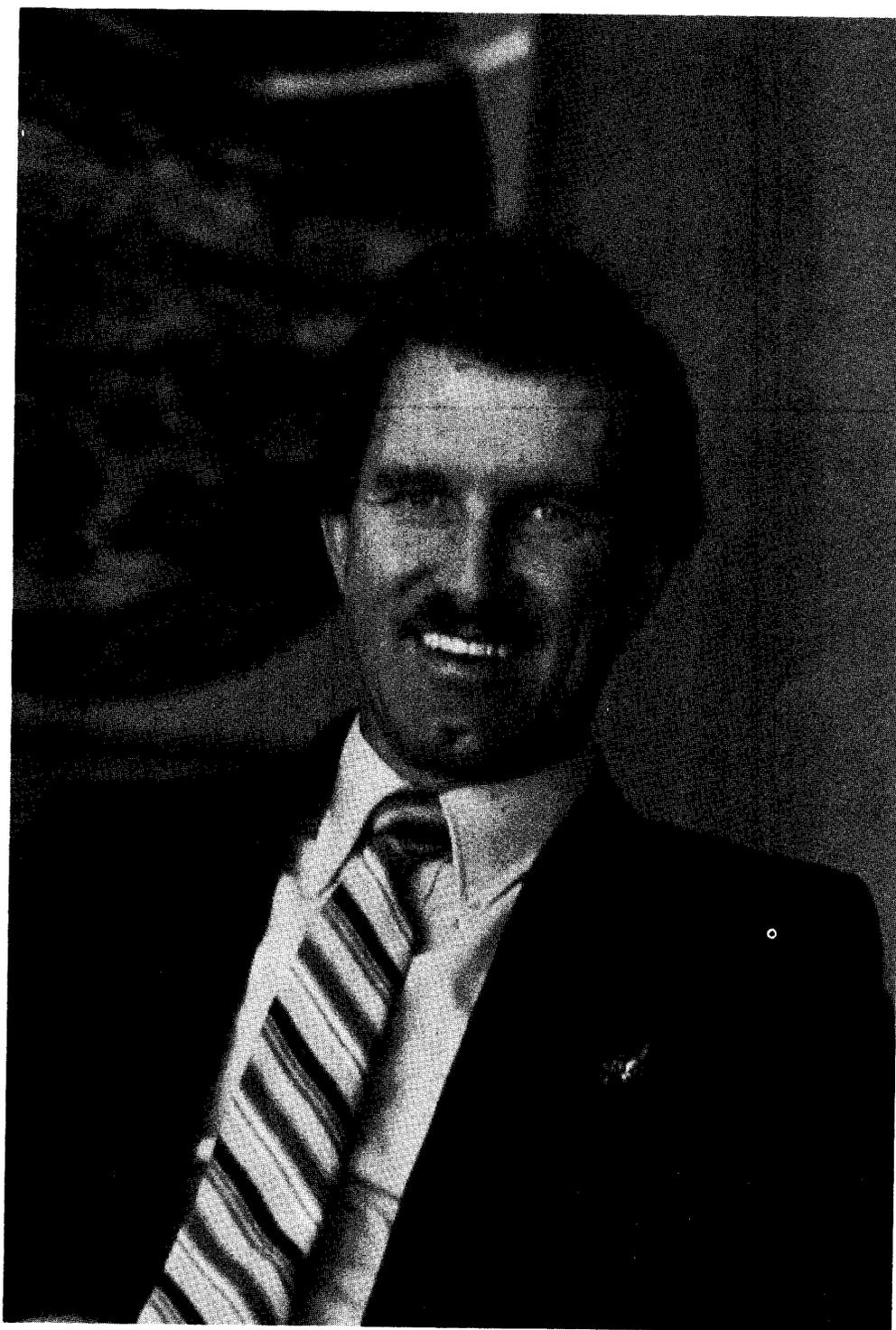
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CALENDAR

The Fall Semester 1983

SEPTEMBER	6	Tuesday	Faculty conference
	7	Wednesday	Residence halls open
	8-10	Thursday-Saturday	Orientation and registration
	12	Monday	First semester classes begin 8:00 a.m. Convocation 9:45-10:40 a.m.
NOVEMBER	9-10	Wednesday, Thursday	Reading recess and spring/interim advising
	11-22	Friday-Tuesday	Registration for interim and spring semester for all currently enrolled students
	21	Monday	Friday class schedule in effect
	22	Tuesday	Thursday class schedule in effect
	23	Wednesday	Thanksgiving recess 5:00 p.m.
	28	Monday	Classes resume 8:00 a.m.
DECEMBER	15	Thursday	Classes end 10:00 p.m.
	16	Friday	Examinations begin 9:00 a.m.
	21	Wednesday	Examinations end 9:30 p.m. Christmas vacation begins

The Interim 1984

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

The Spring Semester 1984

JANUARY	31	Tuesday	Spring semester classes begin 8:00 a.m.
MARCH	30	Friday	Spring vacation begins 10:00 p.m.
APRIL	10	Tuesday	Spring vacation ends 8:00 a.m.; Monday class schedule in effect
	20	Friday	Classes dismissed 12:30 p.m. (Good Friday)
MAY	8	Tuesday	Classes end 10:00 p.m.
	9	Wednesday	Reading recess
	10	Thursday	Examinations begin 9:00 a.m.
	16	Wednesday	Examinations end 4:30 p.m.
	19	Saturday	Commencement 3:00 p.m.

The Summer Sessions 1984

MAY	29	Tuesday	First session begins 8:30 a.m.
JUNE	20	Wednesday	First session ends
JULY	2	Monday	Second session begins 8:30 a.m.
	4	Wednesday	No classes
	25	Wednesday	Second session ends
	26	Thursday	Third session begins 8:30 a.m.
AUGUST	17	Friday	Third session ends

The Fall Semester 1984

SEPTEMBER	4	Tuesday	Faculty conference
	5	Wednesday	Residence halls open
	6-8	Thursday-Saturday	Orientation and registration
	10	Monday	First semester classes begin 8:00 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 for Calvin Studies in 1982.

Library

The Calvin Library, at the center of the campus, serves students of both the college and the seminary. Its 350,000-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 2,200 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 Computer Center is located in the William Spoelhof College Center. The center provides computing services to support instruction and research at the college as well as services to administrative offices of the college and the agencies of the Christian Reformed Church. The principal installations are two PRIME 750 computer systems and one PRIME 400 system.

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

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

The second PRIME 750 system consists of a central processing unit with three million bytes of error-correcting memory and 300 million bytes of disk storage. It provides service to Calvin students and faculty. In addition to terminals used by faculty members, fifty remote terminals are available at various locations on campus for student use. Languages supported include FORTRAN, COBOL, 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 strive, in their teaching and personal relations, to reflect the Lordship of Christ and the authority of the Word of God.

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

Government

The corporate name of the college is CALVIN COLLEGE AND SEMINARY. It is governed by a single board of trustees which represents the ecclesiastical divisions of the church, arranged 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 is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools. It is also accredited by the American Chemical Society. 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. During each of the two semesters a student normally 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 purpose of the association is to support Christ-centered education through service to Calvin and its alumni and friends.

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

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 encouraged to send representatives to the May meeting. The work of the Association is facilitated by the Director of Alumni Relations.

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



STUDENT LIFE AND SERVICES

The student life on campus and its regulation

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

Worship and Christian Service

All students are expected to worship regularly at a church of their choice. Sunday worship services are held on the Knollcrest campus under the auspices of four local consistories. Students are encouraged to avail themselves of the counseling services of the local pastors or of the college 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), married students, and students 21 or older as of October 1 of the fall semester may choose their own type of housing and are permitted to reside off campus.

The college requires all students to register their place of residence with the Housing Office and to notify that office of all changes in residence during the period of their enrollment. 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 Communication Arts and Sciences. Students from all departments participate. The long Calvin tradition of creative writing for publication and for private reading is encouraged by the members of the Department of English. *Dialogue* and *Chimes* provide opportunities for student publication. The Department of Art seeks to arouse interest in the various graphic and plastic arts.

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

Athletics

The core program of required physical education is organized to promote physical fitness, to introduce students to a variety of sports activities, 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 National Collegiate Athletic Association (NCAA), Division III.

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 Burgess. 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

Academic counseling and advising is the responsibility of Calvin faculty members. However, Mr. Charles Strikwerda, Director of Academic Advising, is available to assist students in advising. His office is located in the Registrar's Office in the Spoelhof College Center.

Shortly after registration freshmen are assigned advisers from the faculty. 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 that is of interest to those seeking employment is publicized. The *Intra-Campus Bulletin* and *Placement Profiles* list the times when prospective employers will conduct interviews. Personal counsel is given in job-search techniques such as resume writing and interviewing skills. The Placement Office maintains a Placement Resource Center which makes available information on employers and employment in various parts of the United States, in Canada, and in foreign countries, as well as in federal and state governments. Seniors who will be seeking the assistance of the Placement Office are asked to register for placement services early in their final year at Calvin.

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

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

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

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+ (2.3) or higher in their college preparatory courses whose ACT-Composite is 16 or higher or whose SAT-Verbal is above 370 and SAT-Mathematics above 390 are normally given regular admission. Applicants with lower grades and scores and with deficiencies in their high school preparation are reviewed individually to find evidence of the ability to do satisfactory college work. Such applicants are admitted under special conditions. This program is described on page 79.

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. These tests are administered on May 7-11 and 14-18, 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 41 and 45 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 normally given five times a year throughout the world. Application forms are generally available from high school principals and counselors but may be requested from the American College Testing Program, Box 168, Iowa City, Iowa 52240. This test is required by the State of Michigan for its competitive scholarship program. Testing dates for the 1983-84 academic year are October 29, December 10, February 11, March 31, and June 9.

The Scholastic Aptitude Test will be given this academic year on October 15 (Illinois only), November 5, December 3, January 28, April 7, May 5, and June 2. 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 1982 the average high school grade was B (3.07); the average SAT-V was 495 and the SAT-M was 539; and the average ACT-E was 21.3, the average ACT-M was 23.0, and the Composite, 22.9.

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

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

Transfer Students

Students transferring from other colleges or universities must follow the same procedures of applying for admission as freshmen, and they should have a cumulative grade point average of C (2.0) or higher. A high school transcript and ACT or SAT test results are also required. They will receive credit for work done in accredited institutions, provided the courses were of an academic nature and the students have received an honorable dismissal. No more than seventy semester hours of advanced credit will be allowed for work completed at an accredited junior college. Furthermore, no matter how much work done at other institutions may be accepted, a student must complete his last year in residence and at least one upper-level course in his major to graduate from Calvin.

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 41-45).

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	$\frac{1}{2}$ unit	One or two semesters
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 International Students

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

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

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

Admission to Nursing Programs

Students wishing to become nurses may follow two different programs at Calvin College. They may also complete part of their program at Calvin before transferring to a different school.

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

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 the school of nursing and must be accepted by both. Inquiries concerning the nursing program should be addressed: Director, Blodgett Memorial Medical Center School of Nursing, 1840 Wealthy Street, Grand Rapids, Michigan, 49506 or by telephone, (616) 774-7898.

Visitors and Auditors

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

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

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 course units for credit. In exceptional cases a student may apply for permission from the registrar to carry more than four and three-quarter course units. Such an application requires the recommendation of the student's academic adviser or department chairman and the approval of the registrar. To be eligible for consideration the student must have a cumulative grade point average of 3.0, must have received no grades of incomplete during the previous two semesters, and is expected to limit outside employment.

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

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

Grading Systems

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

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

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

Auditors are not given grades, but their registration is noted on the official record. However, if they fail to attend classes, the instructor will report a grade of W.

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

the dean of women or dean of men and of the registrar will be given grades of W in all courses.

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

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

Honors, Eligibility

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

Students desiring to graduate with an honor designation must participate in the honors programs. Consult page 46 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 preparation, the desire, and the ability to make satisfactory progress toward a degree. In practice, however, some students do not make the progress expected of them, either because they are not willing to devote the necessary time to their studies or because they are unable to make up for deficiencies in their previous academic training. Such students are warned, offered special assistance and vocational counseling, and given an opportunity to improve their records. Failing in that, however, they will be dismissed.

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

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

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

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

2. A student receiving Veterans Administration benefits who is placed on academic probation must within the next two semesters meet the requirements for good academic standing

in order to continue to be certified for such benefits and must, prior to enrolling for the final four course units, have earned a cumulative grade point average of 2.0.

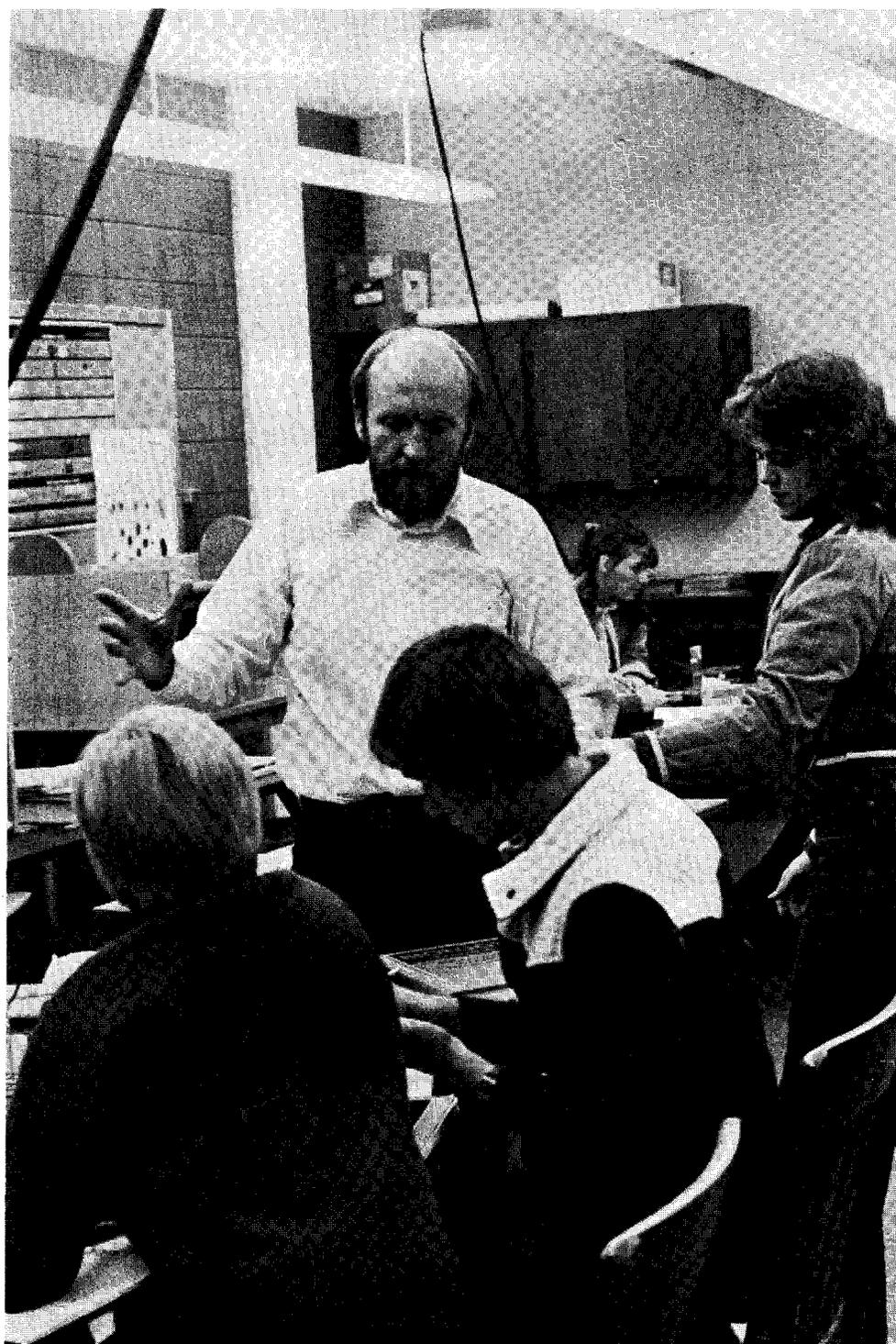
Any student whose average falls below the minimum required for continuation is subject to dismissal. All students permitted to continue but not meeting the requirements for good standing are placed on probation. Freshmen placed on probation are limited to three and one-half course units and required to participate in the Academic Support Program. All students on probation are expected to limit extracurricular activities and part-time employment and to seek help in developing their academic skills either from a faculty adviser or from the staff of the Academic Support Program and must raise their grade point averages above those of the previous semester.

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

Application for Degrees and Certificates

In addition to the formal requirements for degrees described in the section on "The Academic Programs" beginning on page 41, students must satisfy certain technical requirements. Normally, they must complete their last year in residence at Calvin. They must also complete a Major Concentration Counseling Sheet and have it signed by their departmental adviser and must meet all of the conditions specified in that sheet. (These sheets normally are completed during the sophomore or junior year.) Finally, they must file a formal application for a degree at the Office of the Registrar not later than the beginning of the semester in which they expect to graduate. If they are completing teacher education programs, they must also file an application for Michigan certification at the same time they apply for a degree or not later than a semester before they complete the certification requirements.

Students desiring to graduate with an honors designation must apply for admission to a departmental honors program and meet those requirements and the general honors program requirements. Consult page 46 for details.



EXPENSES

Tuition and fees

TUITION FOR THE ACADEMIC YEAR is \$4,280; room and board on campus is \$1,980; and the estimated cost for textbooks and classroom supplies is \$200.

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

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

BASIC CHARGES

Tuition, up to 4.75 course units a semester	\$2,140
Tuition, per course-unit rate	575
Tuition, auditing, per course unit	285
Tuition, clinical years, B.S. in Nursing	5,330
Room and board, academic year	1,980

SPECIAL FEES

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
Transcript, after first one	1

DEPOSITS

Housing deposit	50
Physical education locker deposit	5

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

Students are encouraged to pay their tuition, fees, room, and board in full at the time of registration each semester. A payment schedule is available at registration for those students who need to pay in installments. This schedule calls for a down payment at the beginning of each semester and payments of approximately one-third of the balance at the beginning of each subsequent month. The minimum down payment required at registration for resident students is \$1,350 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 15 in the first semester and May 9 in the second. Transcripts are not issued for students owing money.

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

If a student withdraws from the college his charges for the semester (tuition, room, board, etc.) will be prorated from the beginning of the semester until his official withdrawal at the Registrar's Office, but in no case will he be charged less than \$25. A student who withdraws from a single course will have his charges reduced only if he withdraws at the Registrar's Office within the first 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.

Financial Aid

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

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

The Office of Scholarships and Financial Aid assists students in working out programs to cover 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 and is divided into three sections: (1) tuition reduction programs, (2) academic scholarships, and (3) need-based aid. The scholarships and need-based programs and their conditions are described in the following sections. Questions or requests for additional information should be directed to the Office of Scholar-

ships 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 1983-84, grants are expected to be \$500 per year for full-time students, and \$250 per year for students enrolled at least half time but less than full time.

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 1983-84 are:

	Grant per semester, if paying full tuition	Grant per course, if paying by course
For Michigan students		
Within 10 miles of the campus	\$175	\$40
From 10 to 150 miles	225	40
Beyond 150 miles	285	40
For out-of-town students		
Within 300 miles	385	60
From 300 to 1,000 miles	435	70
More than 1,000 miles	485	80
Manitoba, Ontario, Quebec	435	70
Alberta, British Columbia, Nova Scotia, Prince Edward Island, Saskatchewan	485	80

ACADEMIC SCHOLARSHIPS

A variety of scholarships are available for full-time students. Scholarships are awarded to incoming students to attract good students who are likely to do superior work at Calvin, and to upperclassmen to encourage superior academic performance. Most scholarships are granted on the basis of the student's academ-

ic record and potential, but in some cases other factors such as program of study, financial need, and other designated criteria are taken into consideration. More than 250 scholarships are awarded annually to freshmen and approximately 300 to upperclassmen. Descriptions of specific scholarships are given beginning on page 31. Students eligible for more than one scholarship are granted the larger scholarship.

For Freshmen. Most scholarship awards for freshmen in 1983-84 range from \$350 to \$1,000. (These amounts will be increased to \$400 to \$1,100 for 1984-85.) All freshmen are considered for scholarships at the time of admission. Scholarship review begins in December and students who are selected to receive a scholarship are notified soon afterward. Students who wish to be considered for a Calvin College National Merit Scholarship, a Freshman Honors Scholarship, a Krull Scholarship, a Steelcase Scholarship, a Vander Brug Scholarship, or an Emerson Minority Grant must be admitted by February 1, and must arrange to have their ACT or SAT scores reported to the college by that date.

For Upperclassmen and Transfer Students. Beginning in 1984-85, scholarships will be awarded to upperclassmen in amounts similar to those available to freshmen: from \$400 to \$1,100. These scholarships will be renewable for up to four years, or until graduation, if the appropriate grade point average is maintained.

The Upperclassman Scholarships of \$400 and \$800 will be awarded automatically to those having a cumulative grade point average of 3.50 or 3.75, respectively, at the end of the first semester. No scholarship application is required. A special application is required, however, for those who wish to apply for an Alumni-Faculty Scholarship, an Honors Scholarship, or other special scholarships listed in the directory of upperclassmen scholarships.

Transfer students are considered for Upperclassman Scholarships on the basis of their academic record at the time of admission and are not required to file a scholarship application form. Students must be admitted by March 1 to receive maximum consideration for 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. Students currently enrolled at Calvin who want to be considered for a scholarship for the following year are required to file a scholarship application form. New students in master's degree programs will be considered on the basis of their academic record at the time of admission. New students must be admitted by March 1 to receive maximum consideration.

NEED-BASED FINANCIAL AID

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

Applications for need-based aid must be filed each year. To be fair to all students, requests for aid must be supported by a financial statement which provides information about income, expenses, assets, and indebtedness. This

statement is reviewed for the college by an independent agency using nationally standardized criteria to determine the degree of need. Information about the criteria used to determine eligibility for need-based aid is given in a brochure entitled, *Do You Qualify?: a guide for estimating your eligibility for financial aid at Calvin College*. This brochure is available from the Office of Scholarships and Financial Aid.

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

ACADEMIC PROGRESS REQUIREMENTS FOR FINANCIAL AID

Students receiving financial aid must meet the normal academic standards of the college, as described on page 24, for continuation as a student. In addition, those receiving financial aid must meet the minimum standards of academic progress as described below to continue to receive aid in certain programs. These include the Michigan Competitive Scholarship, Tuition Grant, and Differential Grant programs, Calvin College scholarships and grants, the Pell Grants, the Supplemental Educational Opportunity Grants (SEOG), National Direct and Guaranteed Student Loans, and college work-study employment. Programs not affected are the Denominational Grants and non-work-study employment.

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 approximately thirty Honors Scholarships to students of superior academic achievement and potential. The minimum stipend of this scholarship is \$950 for direct educational expenses plus \$50 for books other than textbooks. For 1984-85, the amount will be increased to \$1,050 plus \$50 for books.

Calvin College National Merit Scholarships. 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.

Valedictorian Freshman Scholarships. Scholarships of \$700 each are awarded to incoming freshmen who rank first in their high school class. For 1984-85, the amount will be increased to \$800.

Freshman Scholarships for National Merit Semi-finalists. Calvin College awards a scholarship of \$700 to each prospective freshman who has been selected as a Semi-Finalist in the National Merit Scholarship Program. These scholarships will be increased to \$800 for 1984-85.

Freshman Scholarships. Scholarships of \$350 (\$400 for 1984-85) 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.

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 college 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. For 1983-84 scholarships of \$250 each were awarded to two freshmen and six upperclassmen. The recipients are selected by the Scholarships and Aids Committee of the college. Applicants are judged on the basis of scholastic ability, character, and need. If scholarships are not filled by children of Steelcase employees, for whatever reason, the scholarships are available to other Michigan residents. To be considered, eligible freshmen must write a letter of application to the Office of Scholarship and Financial Aid.

Emerson Minority Grant. Each year Calvin College receives a gift of \$2,000 from Mr. and Mrs. James Emerson to be used for

grants to minority students. Two grants of \$1,000 each are awarded yearly on the basis of the students' academic record and financial need, with preference given to students from single parent families. A minimum grade point average of 2.5 is required for consideration; incoming freshmen are considered as well as returning students.

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 Scholarships. A number of awards of \$500 each are presented by the Calvin College Oratorio Society to prospective freshmen for use toward the cost of individual lessons in applied music. These awards are given to instrumentalists and vocalists who have records of superior achievement in high school music activities, who give evidence of outstanding talent and musicianship in audition, and who will participate in the scheduled rehearsals and performances of at least one of the following: band, capella, campus choir, orchestra. The deadline for applying for the Oratorio Society and Vander Heide awards is April 1. Application blanks and additional information are available from the Music Department. Awards are announced by the end of April.

Vander Heide Voice Scholarship. An award of \$500 is offered annually by Mr. and Mrs. Jan Vander Heide to a vocalist who has a record of superior achievement in high school music activities. The award is applied to four semesters of private voice lessons. The recipient will be expected to participate in the scheduled rehearsals and performances of at least one faculty-directed choral ensemble. Only incoming freshmen are eligible. Applicants will be judged on the

basis of evidence of talent and musicianship. See Oratorio Scholarship above for application procedure.

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

Sophomore, Junior, and Senior Scholarships and Awards

Upperclassman Scholarships. Two types of scholarships will be awarded to upperclassmen for 1984-85 in addition to the named scholarships described below. Scholarships of \$800 will be awarded to those who have a cumulative grade point average of 3.75 or higher at the end of first semester and scholarships of \$400 to those with a cumulative grade point average between 3.50 and 3.74. Students who are eligible for one of these scholarships in addition to one of the named scholarships described below will be granted the larger scholarship. The \$800 and \$400 Upperclassman Scholarships will be granted automatically on the basis of grade point average; no application is required. All other scholarships for upperclassmen require the completion of a scholarship application form and two faculty recommendations. Students with a grade point average below 3.50 who feel that there are unusual circumstances (e.g. serious illness) that should be taken into account can file a scholarship application form to request special consideration. Transfer students are considered for the \$800 and \$400 scholarships at the time of admission on the basis of their grade point average at their previous college. No scholarship application is required.

Calvin Alumni Association Scholarships. The Calvin Alumni Association awards nine scholarships of \$1,100 each to students of superior intellectual ability and maturity who manifest deep commitment to Christ and to their alma mater, actively serve their

neighbor, and articulate their life goals with precision and grace. Candidates for these scholarships are selected by the Scholarships and Aids Committee from among the applicants. They are then interviewed by members of the Alumni Association Board who make the final determination.

Upperclassman Honors Scholarships. Beginning in 1984-85, Honors Scholarships will be awarded to upperclassmen who have done superior work at Calvin. There will be 15 to 20 scholarships awarded at each class level in amounts of \$1,050 each. Applications for next year must be filed with the Office of Scholarships and Financial Aid by March 1, 1984.

Clarence and Anne Beets Scholarship. Dr. William Clarence and Mrs. Anne Beets have contributed a gift to Calvin College, the income from which is used to provide scholarships to students. Dr. and Mrs. Beets are interested in helping students who have been successful at Calvin and have the potential and motivation to continue to be successful but lack the financial resources to meet all of their expenses. For 1984-85, two scholarships of \$1,000 each will be awarded to students entering their junior or senior year. To be considered for a scholarship a student must demonstrate financial need, be making normal progress toward a degree, and have a cumulative grade point average of 2.5 or higher.

Bere Memorial Scholarship. The college has received a gift from Mrs. Jeanne L. Bere in memory of her late husband, Paul Bere, the income from which is used to award one scholarship of \$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 or more is awarded each year in memory of Dr. John W. Brink to a premedical student for use in the junior or senior year at Calvin College. Selection shall be on the basis of character, academic performance, and potential without regard to need.

The Margaret and Douglas Bush Family Scholarship. The Bush family has provided the college with funds to encourage worthy students to prepare for positions in business and business education. Two or three schol-

arships of \$500 or more are awarded each year by the Scholarship Committee of the college on the basis of diligence, character, commitment to service of the Lord and mankind, promise of growth, and, in some cases, financial need. 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 or more 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 to students pursuing pre-professional courses in medicine, dentistry, nursing, physical therapy, and related professions and para-professions. Six scholarships of \$700-\$900 each were awarded for 1983-84. 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 \$1,000. 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 recip-

ient; 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. Two or three 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. The Spalink family has established a scholarship fund in memory of John Spalink, Jr., which provides one scholarship of \$500 each year. Its purpose is to encourage superior students to enter missions. The scholarship is awarded to a student of either sex who shows a definite interest in a missionary vocation. The award is given primarily for academic achievement, although other factors, such as financial need, will be taken into account. Generally, members of the Christian Reformed Church who aspire to a career with that church's missions will be shown preference.

Steelcase Foundation Scholarships. The Steelcase Foundation of Grand Rapids, Michigan, offers scholarships totalling \$2,000 to applicants who are children of Steelcase employees. For 1983-84, scholarships of \$250 each were awarded to two freshmen and six upperclassmen. 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, eleven scholarships of \$500 each are available each year to juniors and seniors from Kent County. The primary purpose of this program is to provide assistance to students with good academic records (B or better) who have financial need. Recipients of this scholarship who wish to be considered for renewal must reapply each year.

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

The Vander Ark Family Scholarship. The Vander Ark family, known as the "teaching family", has funded a scholarship which is available to students at Calvin who exhibit a strong commitment to Christian service, scholastic ability, diligent study habits, sound moral character, and promise of growth in spiritual and moral leadership. In some cases, financial need may be considered as well. For 1984-85 it is expected that one scholarship will be available in the amount of \$500 or more.

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. For 1983-84, there are five scholarships of \$900 each. Selection criteria include the student's academic record, character, and need.

Woodlawn Christian Reformed Church Minority Scholarship. Each year the Woodlawn Christian Reformed Church of Grand Rapids, Michigan, provides the college with up to \$2,000 to be awarded to a minority student who is personally committed to Jesus Christ and His Church. The amount of the scholarship, which can range from \$1,000 to \$2,000, depends on the amount of the student's need and the availability of other aid. A minimum grade point average of 2.50 is required.

Ruth Zylstra Memorial Scholarship. Each year Calvin College awards one scholarship of \$200 or \$300 to a student in a nursing program who is entering the sophomore, junior, or senior year at Calvin. Selection is made by the Scholarship Committee on the basis of the student's academic record, potential, character, and financial need.

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.

Graduate Scholarships

Graduate Honors Scholarships. A limited number of Honors Scholarships are awarded each year to graduate students who have superior academic records in their previous college work. The amount of the scholarships for 1984-85 will be \$1,050.

Graduate Scholarships. Scholarships of \$800 and \$400 each will be awarded for 1984-85 to graduate students who have a cumulative grade point average of 3.50 or higher in their previous college work. For students who are new in the program, the scholarship will be based on their undergraduate record. For students who have had a semester or more of graduate work, the scholarship will be based on their graduate record.

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 1983-84, grants are expected to be \$500 per year for full-time students and \$250 per year for students enrolled at least half time but less than full time.

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.

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

Albert Postman Loan Program. The late Mr. Albert Postman of La Glace, Alberta, Canada, has established a loan fund to assist Canadian students attending Christian colleges. The primary purpose of the fund is to assist students who are planning to enter full-time Christian service with the Christian Reformed Church or its related agencies. To the extent that funds are available, however, loans will also be made to other Canadian students who are in need of assistance.

Calvin College Grants. The college has established a program of grant assistance for students who have financial need but are not eligible for other grant programs or whose need cannot be met with other grant programs. The program is open to graduate as well as undergraduate students; the maximum grant for 1983-84 is \$3,000.

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 cul-

tures 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 annual State Extemporaneous Speaking Contest.

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

Ervina Boevé Scholarship for Theater Arts. Through the generosity of former students

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

The Dr. Peter D. Hoekstra Memorial Award. Dr. Robert G. Andree and Mrs. Katherine Schuringa Andree have established a prize of \$2,000 to be awarded annually to an outstanding senior graduating with a major in history. The award is made in memory of the late Dr. Peter D. Hoekstra, a former professor of history at Calvin College. Selection is made by the faculty of the History Department on the basis of academic excellence. The recipient must have completed at least two years of undergraduate work at Calvin College.

The Dr. Roger A. and Bradley Hoekstra "Toward Christian Excellence in Medicine" Award. Roger A. Hoekstra, M.D., an alumnus and supporter of Calvin College, and his son, Bradley J., an outstanding sophomore 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 an appropriate commemorative plaque. The candidate for the award will be selected by a faculty committee from nominations made to it by the faculty. The candidate must be a graduating senior who has completed more than two years of undergraduate work at Calvin College and has been accepted into an accredited medical school. The award will be based on academic excellence, strength of Christian character, and potential for excellence and Christian service in the practice of medicine.

Harmon D. Hook Memorial Award in English. An award of \$50 is offered each spring to an English major who has indicated a serious interest in English or American language and literature and whose work in the

discipline gives evidence of personal enrichment and promise of future service. To be considered, a student should have demonstrated not only academic competence but also such qualities as an interest in humane letters and a Christian concern for cultural and spiritual growth through literature. The English Department selects the person to receive the award.

Monsma 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 Department of Communication Arts and Sciences selects the nominee to receive the award.

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

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

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

O. K. Bouwsma Memorial Award in Philosophy. Through the generosity of the wid-

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

The Rinck Memorial Award. A fund has been established by former students and friends as a memorial to William Rinck, professor of mathematics at Calvin College from 1905 to 1920. The income of this fund is devoted to an award for outstanding work in mathematics. The prize is awarded annually to the senior student majoring in 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 have established a fund, the income from which is used to offer two prizes for the best essays on a subject bearing on the evangelism of the Jews. First prize is \$100; second prize is \$75. The contest is open to all college students and is administered by the Department of Religion and Theology.

Henry Zylstra Memorial Award. In honor of the memory of Professor Henry Zylstra, an award of \$150 is offered each spring to a junior English major at Calvin who plans to continue studies in literature on the graduate level upon graduating from Calvin College. The award is intended primarily to help defray expenses incurred in applying to graduate schools. Application should be made to the chairman of the English Department by March 1 of the applicable junior year. The recipient will be selected by the English Department on the basis of demonstrated academic ability, commitment to and promise of success in graduate work, and a concern for Christian liberal education.

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

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

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

Scholarships and Grants

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

American Society of Women Accountants Scholarship Fund. Scholarships of \$250, \$150, and \$100 each are awarded to women students of accounting enrolled in four year colleges and universities in the State of Michigan. These scholarships are awarded for the purpose of encouraging women to continue their accounting studies toward the goal of obtaining the C.P.A. Certificate and/or obtaining a position in managerial accounting.

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.

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

Post-Graduate Fellowships

Board of Trustees Scholarship. Calvin Seminary, under the authority of the Board of Trustees of Calvin College and Seminary,

offers a scholarship of \$950 to a member of the graduating class of Calvin College. The award will be made to a student who plans to enter Calvin Seminary and, eventually, the ministry of the Christian Reformed Church. 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. Other degrees offered by the college include the Bachelor of Fine Arts in art, the Bachelor of Arts in Recreation, the Bachelor of Science in Nursing, the Bachelor of Science in Accountancy, the Bachelor of Science in Engineering, the Master of Arts in Teaching, the Master of Arts in Christian Studies, as well as a Bachelor of Science in Education in a combined curriculum plan with the Grand Rapids Baptist College. Cooperative bachelor of science degrees are offered with a number of other institutions in engineering, forestry, medical technology, natural science, and special education.

Bachelor of Arts, Bachelor of Science Degrees

Because of the flexibility of the Calvin curriculum and the many alternative ways of meeting the formal requirements, including fulfillment by examination,

faculty advisers assist students in working out their schedules each semester and are available at any time.

A typical student carrying a normal load for four years will complete thirty-seven and a half courses, including four interims. However, to provide flexibility, the formal graduation requirements are the successful completion of thirty-six courses, including three interims, the designated liberal arts core and an approved concentration, with a minimum average grade of C (2.0) both overall and in the program of concentration. Not more than one course 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 100 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, 216, 217, or 131, which is required in pre dental and premedical programs. A student may also meet this requirement by completing 107 or both 105 and 106.

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

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

Students who have completed with 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 with a minimum grade of C 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, Communication 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 have not completed either four units of high school English or a year's course in art history or music appreciation. English 325 and 326 may be taken to satisfy this third course requirement.

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

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

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

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

6. Competency is required in one foreign language

Students must demonstrate a competency in a foreign language that is equivalent to two years' study in college or four years' 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. In no case, however, will students receive graduation credit for more than four courses from the 121-123 and 101-202 series. Languages other than those taught at Calvin may be accepted. Students for whom English is a second language are exempt from this requirement but are required to take English core courses each semester until they have completed two courses in English or American literature.

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

II. INTERIM COURSES

A student must complete a minimum of three regular interim courses, courses numbered with either a W or an I as a prefix, for graduation. (Transfer students must complete one interim course for each year in residence.) Interim courses are graded honors (H), satisfactory (S), or unsatisfactory (U), except those courses that satisfy core requirements, which are graded in the conventional A-F system. Students 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 concentra-

tion 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 75. Group majors designed for teacher certification programs are described in the section on Teacher Education Programs, on pages 49 and following. Students may also initiate interdisciplinary programs of concentration other than those formally approved by the faculty. Requirements for developing such interdisciplinary programs are available from the registrar's office. Such programs require the approval of the departmental chairmen concerned as well as of the registrar.

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

Special academic programs

Course Credit and Exemption Examinations

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

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

Second, students may receive course credit by securing a satisfactory score on any of the Subject Examinations of the College-Level Examination Program (CLEP) of the College Board. These tests are usually administered during the third week of each month. The minimum score for credit is that which corresponds to the final course grade of C on the tables published by the College Board. For instance, a minimum score of 47 is required in English composition, calculus, general chemistry, general psychology, western civilization, and American government. Scores on other subjects are higher or lower and, in foreign language, they determine the amount of credit that will be granted.

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

The Honors Programs

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

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

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

To graduate with honors, students must apply to their major departments, must have a cumulative grade point average of 3.3 or higher, must complete at least six honors courses with an average of 3.0, including the structured honors requirements of their major departments, which must include at least two departmental honors courses. Regular interim courses with honors grades are not considered honors courses. Before applying to the department the student must have completed at least two honors courses in any department and must be maintaining a cumulative average of 3.3 or higher. Juniors and seniors in such Departmental Honors Programs may, subject to the approval of their chairman, register for a fifth course, which may be graded on the basis of satisfactory or unsatisfactory.

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

The Academic Support Program

The Academic Support Program provides training and assistance to students who desire to improve upon their past academic performance or who have encountered difficulties in their academic programs. It offers opportunity for development of college-level study and reasoning skills in a classroom setting, through personal academic counseling and from trained tutors.

Special intensive classes are offered in English rhetoric and English as a second language for students who need systematic review of language skills, and mathematics review courses are available to liberal arts students as well as science students who have limited preparation in mathematics. Course descriptions can be found on page 79.

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 development of individualized pro-

grams for improvement in reading, reasoning, spelling, specialized vocabulary, and mathematics.

The director of the program is Mrs. Evelyn Diephouse.

Self-instruction in Languages Not Otherwise Taught at Calvin

Students may earn credit for foreign languages not otherwise taught at Calvin through a supervised, self-instruction program. Such languages include Arabic, Chinese, 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

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

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

month-long intensive course in the country of their program before the beginning of the fall semester. English language programs are available in Wales and England.

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

Other Off-Campus Programs

Internship programs at the Chicago Metropolitan 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. John Verwolf, Director of Placement.

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

Washington Semester Programs

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

Course descriptions for the American Studies Program are found under Interdisciplinary courses. Calvin prefers applicants who are in their junior or

senior year, who have a grade point average of 3.0 or higher, and who show promise of benefitting from the internship and seminar experience. Further information and application forms may be obtained from Mr. Charles Strikwerda of the Political Science Department.

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

Typically students participate in the program during their junior year. 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.

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. Beginning with the class entering in 1983, students will be required to pass competency tests in English, mathematics, and reading. 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

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.

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.

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

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

Elementary education. The minimum elementary education program requires the completion of the general education requirements (See pages 41-43 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, physical education, political science, and speech; a ten and a half course concentration from art and music.

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

Language Arts Studies Group Major. English 100 and Communication 214 are required. Students majoring in this group must also complete one of the following five-course departmental programs: English 100, 200, 325, and two others; or Communication 203, 214, 215, and two others. In addition students must complete the three designated courses from the second department in this group. The remainder of the ten and a half courses and the electives must be chosen from departments in this group with the approval of the language arts adviser, Mr. Henry Baron of the Department of English.

Social Studies Group Major. The four required courses for this major are History 101 or 102; Sociology 151; either Economics 151 or Political Science 201 (United States), 210 (Canada), or 151; and either Geography 101 or, if part of the three-course sequence below, Geology 103 or 110. Students must also complete one of the following five-course departmental sequences: Economics 151, 321 or 322, and three others; History 101 or 102 and four others; Political Science 151, 201 or 210, 202 and two others; Psychology 151, 204, 310, and two others; Sociology 151 and four others. In addition, a student must complete three courses from a second department in this group, including any course designated above, or from a sequence in geography consisting of Geology 100 or 113 and Geography 210 and 220. Students may not take sequences in both psychology and sociology. The remainder of the ten and a half courses and the electives must be chosen from departments in this group with the approval of the social studies adviser, Mr. Samuel Greydanus of the Department of History.

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

mended three-course sequence in biology is made of any three courses listed for the five-course sequence. In chemistry, 103-104 or 113-114 and one elective. In environmental science, 201, 202, and Biology 216 or Geology 100. In geology, 103, 104, or 151; 152; and 212 or 311. In health sciences, Biology 107, 215, and an interim course in health or nutrition. In physics, 123, 124, 181, 182, and one elective; or 221, 222, and one elective.

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

The appropriate education courses for students in elementary education are 301, 303, 304, 305, 322, 324, 325, 345, and 355. The six-course planned program required for Michigan certification typically is met automatically by students meeting the general graduation requirements. Courses recommended for this dual function include: Art 215, Biology 111, 215, 216, or 217, English 100 and any literature course in English or in a foreign language; Geography 101, Geology 100 or 103, History 101 or 102 and any other history course, Mathematics 100, 121, 131, or 161, Music 238 or 339, Physics 112, 113, Psychology 204, Political Science 151, 201, or 210, and Communication 214. Physical Education 221 is recommended as a substitute for a quarter course of basic physical education. A minor in the Academic Study of Religions is also possible. The adviser is Mr. Henry Hoeks of the Department of Religion and Theology.

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 41-43 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 seven professional education courses. 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, geology, 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 course units with at least three and a half in any science taught; *social science* (economics, U.S. history, world history, political science, sociology), a total of seven course units with at least two and a half in any subject taught; *speech*, seven course units, five of which may be in English.

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

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

Calvin College also offers a Bachelor of Science in Special Education degree in cooperation with Grand Valley State Colleges. This program requires four years and two summers to complete. Admission is limited to students who wish to teach the hearing impaired, emotionally impaired, or the physically impaired. Students in cooperative programs with Grand Valley must complete a designated core of thirteen liberal arts courses, a group concentration in social studies, a six-

course planned minor, six professional education courses, and the additional requirements for endorsement in special education. Students interested in either the mentally impaired program or in the consortium programs with Grand Valley State Colleges should consult Mr. Thomas Hoeksema.

In addition, Calvin College offers a Master of Arts in Teaching degree in learning disabilities. Part of the program leads to certification as a teacher of the learning disabled. Applicants must possess an elementary or secondary teaching certificate and must have completed coursework in the education or psychology of exceptional children and in child or adolescent psychology. Two years of regular teaching experience are recommended. Students in this program complete two courses in the context of education, four and one-half courses in the learning disability concentration, two electives, and a project. Practicum experience is included. A non-degree 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. Ynés 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

Students may qualify themselves in accounting in two ways. They may complete a Bachelor of Arts degree with a business concentration, taking additional courses in accounting. This program is described on page 103. They may

also complete a Bachelor of Science in Accountancy degree. This degree program is described on page 66. Students preparing to sit for Certified Public Accounting (C.P.A.) examinations in any state should consult the Department of Economics and Business.

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; Communication 100; and one additional course in the fine arts.

A similar program is also possible at the Ontario Agricultural College of the University of Guelph. Students who enroll at Calvin College after Grade XII can apply to transfer after their sophomore year. The program at Guelph leads to a Bachelor of Science Degree in Agriculture after three additional years. The recommended program for such students is Biology 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
Engineering103	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
Communication 100	½

Business Administration

Balanced preparation for a business career is provided by meeting the general degree requirements (page 41–43) and the business concentration in the Department of Economics and Business. This program provides a minimum of thirteen courses—the equivalent of forty-five semester hours—in business, economics, and related mathematics and computer science courses. See page 103 for a full description of business major and cognate requirements. This concentration along with the general graduation requirements provides a substantial undergraduate coverage of the functions of the business firm, an understanding of the environment of business and human behavior, and an opportunity to develop one's personal Christian commitment and ethical sensitivity. Completion of the program provides a proper preparation for entry into a variety of business occupations as well as a foundation for graduate study in business.

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

<i>First year</i>	COURSES
Interdisciplinary W10 or elective	1
Psychology or sociology	1
English 100	1
History 101 or 102	1
Foreign language	2
Mathematics 131, 132, or alternate mathematics cognate	2
Physical education	½
Religion and theology	1
<i>Second year</i>	COURSES
Art, music, or speech	1
Biological science	1
Business 201, 202	2
Economics, 221, 222	2
Philosophy 151–152 or 153	1–2
Physical education	½
Communication 100 or 240	½
Elective	2

<i>Third year</i>	COURSES
Business 360	1
Business 370	1
Business 325, 326, or Economics 323, 324	1
Computer Science 100 or 131	1
Philosophy 205 or 207	1
Physical science	1
Religion and theology	1
Electives	2
<i>Fourth year</i>	COURSES
Business 380	1
Economics 331–339, equivalent interim, or second course from 323–326	1
Business or economics departmental elective	1
Literature	2
Electives	4–5

Engineering

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

The chairman of the Department of Engineering is Dr. James Bosscher. The programs are described on pages 116–118.

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 105 or 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 Communication 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. John Beebe, 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 41. 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 17.

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

The minimum science requirements for a group concentration in biology and chemistry are typically: Biology 131, 202, 323, and two course units from 264, 331, 334, and 336; Chemistry 103-104, 301-302, and 303; and Physics 221-222 or the equivalent. Mathematics 161-162 is recommended and is required by some medical schools.

Students who select a departmental major must secure the approval of that department, but they should also consult Mr. Tigchelaar to insure that they complete the minimum medical or dental school requirements.

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 must complete twenty-seven courses, including eleven courses from biology, chemistry, and physics, and the eleven designated core courses in subjects other than foreign language, mathematics, and the sciences. For their electives, students should choose such subjects as are required for admission to the particular medical or dental school which they expect to attend. Upon satisfactory completion of this course and one year of successful work in a recognized medical or dental school, the student will be eligible on the combined curriculum plan for the degree of Bachelor of Science in Letters and Medicine, or Bachelor of Science in Letters and Dentistry.

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

Medical Technology

To qualify for the degree of Bachelor of Science in Letters and Medical Technology on the combined curriculum plan a student must complete twenty-seven courses plus twelve months of successful work in an accredited school of medical technology. Students wishing to enter the medical technology program should consult Mr. Hessel Bouma of the Department of Biology. The following courses are prescribed: Biology 131, 205, 206, 264, 334, and 336; Chemistry 103, 104, 253, 254, and one other; one mathematics course from 161 or 131; English 100; Physics 223; History 101 or 102; one course in philosophy; one course in religion and theology; one additional course from history, philosophy, religion and theology, and Interdisciplinary W10; two courses from economics, political science, psychology, and sociology; three courses from art, literature, music, speech, and foreign culture including one from English or American literature; the total of one course unit credit from the core courses in speech and basic physical education; and one foreign language through the first-year college level, a requirement which may be fulfilled by two years of high school study.

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 preseminary 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 preseminary 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. Preseminary 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
Communications	2

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

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

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

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

Natural Resources

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. Al 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 55 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 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. The cooperative nursing program with Hope College is described on page 70. Students complete a two-year prenursing program before applying for admission to the Department of Nursing. Admission is selective. Upon the completion of the requirements, students receive the B.S.N. degree and are eligible to take state licensing examinations.

Blodgett Diploma Program. The diploma nursing program at Blodgett Memorial Medical Center has recently been revised. Formerly, a student took courses at both the college and the school of nursing during the first year. In the new program, during the first year the student takes only college courses that are required prerequisites for enrolling in the nursing courses which are taught in the last two years. There are seven courses required before the nursing courses may be taken. Three courses, Biology 105, 107, and Psychology 151, must be taken in the fall semester and Biology 106 and Psychology 201 must be taken in the spring semester. The two other required courses, English 100 and Sociology 151, may be taken in either semester. In addition, a student may take an optional elective during the regular semester and an interim course. The following two years of nursing courses are taught at Blodgett Memorial Medical Center School of Nursing beginning in mid-August.

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 examination given by the state board of nursing. After passing this examination, a person is licensed to practice as a registered nurse.

The school of nursing will make the selection of students to be admitted approximately one year in advance of their enrolling in the classes taught at the school of nursing. This tentative admission, granted prior to enrolling in the prerequisite courses at Calvin, will become final if the student performs satisfactorily in the prerequisite courses during the first year. After the quota of sixty tentative admissions is reached, a waiting list will be maintained and students will be selected as vacancies occur. The student is therefore advised to make application to the school of nursing prior to admission to Calvin in order to assure admission to the nursing class at Blodgett.

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.

Pharmacy

Students wishing to become pharmacists may complete two years at Calvin before transferring to a school of pharmacy for their final three years. A prephar-

macy program which satisfies the requirements of the School of Pharmacy at Ferris State College in Big Rapids, Michigan, is given below. Students wishing to transfer to other schools should correspond with those schools and consult the pharmacy adviser, Miss Beverly Klooster of the Department of Biology, to determine appropriate programs. Students following normal programs should apply for admission to a school of pharmacy early in their second year.

<i>First year</i>	COURSES
Biology 131, 205	2
Chemistry 103, 104	2
Mathematics 110 and 161, 161 and 162, or 131 and 132	2
English 100 and 200, 235, or 332	2
<i>Second year</i>	COURSES
Biology 206 and 201 or 217	2
Chemistry 301, 302	2
Physics 223 or 221-222	1-2 ½
Economics 151	1
Political Science 201	1
Psychology 151	1

Recreation

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

Other Professional Programs

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



Bachelor of Fine Arts Degree

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

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

The required eighteen-course program consists of three basic art courses (205, 209, 210), four from introductory courses to the various media (310, 311, 320, 325, 350, 360); four intermediate and advanced studio courses from 309, 312, 313, 314, 315, 321, 322, 326, 327, 351, and 361; four courses in history of art including 231 and 232 with two others from 233, 235, 236, 238, 240, 241, 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, and
6. A foreign language through the 202-level or two approved courses in foreign culture.

Bachelor of Science in Accountancy Degree

The Bachelor of Science in Accountancy degree is intended for students who want to prepare for a career in accounting in the context of a Christian liberal arts education. The program requires sixteen course units in the Department of Economics and Business and at least eighteen course units in other departments.

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

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

The Bachelor of Science in accountancy program requires eight courses in accounting (Business 201, 202, 301, 302, 305, plus three from 306, 310, 311, and

315), eight courses providing a general background in business and economics (Business 350, 360, 370, 380, Economics 221, 222, plus two from designated courses), and three courses in mathematics and computer science.

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

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

<i>First year</i>	COURSES
English 100	1
History	1
Mathematics 131-132 or alternative mathematics cognate	2
Philosophy	1
Psychology, sociology, or political science	1
Religion and theology	1
Foreign language or foreign culture course	1
Interim elective	1
<i>Second year</i>	COURSES
Business 201, 202, 360	3
Economics 221, 222	2
Physical education	½
Communication 100 or 240	½
Computer science	1
Literature	1
Natural science	1
Interim elective	1
<i>Third year</i>	COURSES
Business 301, 302, 306, 350, 370	5
Business 325, 326, Economics 323, 324	1
Arts or literature	1
History, philosophy, or religion and theology	1
Interim elective	1
<i>Fourth year</i>	COURSES
Business 310, 311, or 315 (all 3 for CPA candidates)	2
Business 305, 380	2
Economics 331-339, or alternative fourth economics requirement	1
Electives (may include 319 for CPA candidates)	3

Bachelor of Science in Engineering Degree

Students at Calvin College may prepare to be engineers by following a four-year program leading to a Bachelor of Science in Engineering (B.S.E.) degree with concentrations in civil, electrical, mechanical, or general engineering. (Students may complete three years at Calvin before transferring to another school to complete a similar degree. This second option is recommended for students wishing to pursue concentrations not offered at Calvin.) Accreditation for the

B.S.E. will be sought from the Accreditation Board for Engineering and Technology (ABET). Such degrees are intended to prepare graduates for entry-level employment as engineers and for graduate study. Students interested in engineering should consult the chairman, Mr. James Bosscher.

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

<i>First year</i>	COURSES
Chemistry 103	1
Engineering 101, 102	1 ½
Mathematics 161, 162	2
Physics 126, 186	1 ¼
Interdisciplinary W10, history, religion and theology core	1
Economics 151	1
English 100	1
Computer Science 141	½
Physical education, basic	½
 <i>Second year</i>	 COURSES
Engineering 202	1
Engineering 205	1
Engineering 206 or 208	1
Mathematics 231, 261	2
Physics 225	1
Social science, core	1
Philosophy 153	1
Literature	1
Communication 100	½

ADMISSION

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

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

Students must apply for admission at the Department of Engineering during the semester in which they are completing the common model program. At that time they must indicate if they wish to follow the three- or four-year program; those pursuing the four-year program must select a civil, electrical, mechanical, or

general engineering concentration. After a student is accepted, the chairman of the department will prepare a counseling sheet with the student, indicating the remaining requirements. Students may be given a one-semester probationary admission.

THIRD AND FOURTH B.S.E. YEARS

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

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

<i>Civil engineering concentration, fourth year</i>	COURSES
Structural Design*	1
Soil Mechanics*	1
Management Economics*	1
Advanced mathematics elective	1
Engineering Design Project*	1
Engineering elective	1
Philosophy elective	1
Literature elective	1
Engineering Special Topic, interim*	1

<i>Electrical engineering concentration, third year</i>	COURSES
Engineering 311, Electronic materials and devices	1
Engineering 312, Analog Computation, optional	½
Engineering 318, Control Systems	1
Engineering 322, Linear Network Analysis	1
Engineering 385, Microprocessors	1
Mathematics 333, Advanced Analysis	1
Physics 226, Modern Physics	1
Philosophy elective	1
Religion and Theology elective	1
Interim in the humanities and technology	1

<i>Electrical engineering concentration, fourth year</i>	COURSES
Electronic Circuit Design*	1
Advanced Circuit Design*	1
Digital Circuit Design*	1
Engineering Design Project*	1
Engineering elective	1
Management Economics*	1
Literature elective	1
Fine arts elective	1
Engineering Special Topic, interim*	1

<i>Mechanical engineering concentration, third year</i>	COURSES
Engineering 305, Solid Mechanics	1
Engineering 309, Fluid Mechanics	1
Engineering 310, Thermodynamics	1
Engineering 312, Analog Computation, optional	½
Engineering 316, Heat Transfer	1
Engineering 324, Materials and Processes in Manufacturing	1
Fine arts elective	1
Basic science elective	1
Religion and Theology elective	1
Interim in the humanities and technology	1
<i>Mechanical engineering concentration, fourth year</i>	COURSES
Instrumentation*	1
Machine Design*	1
Engineering Design Project*	1
Engineering elective	1
Management Economics*	1
Advanced mathematics elective	1
Philosophy elective	1
Literature elective	1
Engineering Special Topic, interim*	1

*Although these courses have been approved in concept as part of the engineering program, they need faculty approval before being offered.

THIRD YEAR FOR STUDENTS PLANNING TO TRANSFER

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

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

Bachelor of Science in Nursing Degree

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

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

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

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

By January 15 of the sophomore year, students must apply for admission to the Hope-Calvin Department of Nursing. Application forms are available in the department and at the registrar's office. To be eligible for consideration, a student must have completed the prenursing program, must be maintaining a cumulative grade point average of at least C+ (2.3), and must have a minimum grade of C- (1.7) in each designated prenursing course in the sciences and social sciences. Enrollment in the final two years—the clinical nursing years—is limited, admission is selective, and completion of the prenursing program does not assure acceptance.

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

The typical prenursing 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
Communication 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

The nursing courses are described on pages 150–152 under the Department of Nursing. Other courses are described under the department indicated.

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 is 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, or approved seminary courses, that will be suggested in each of these areas 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.

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.

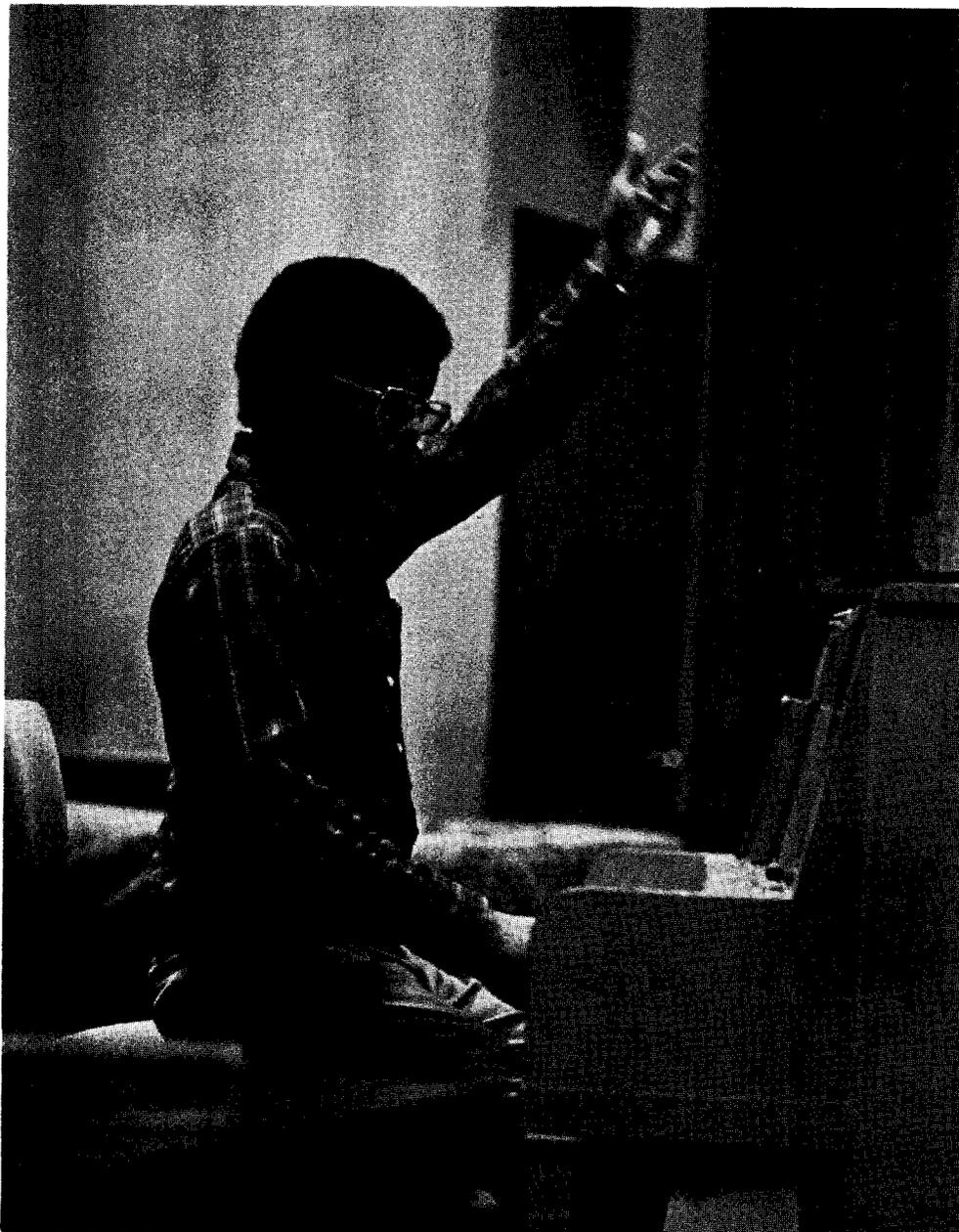
REQUIREMENTS FOR THE DEGREE

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 studies. 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.



COURSES

Description of courses offered by the various departments

The symbols F (Fall), I (Interim), and S (Spring) indicate when each course is offered. The term core designates those courses in each department which meet the general graduation or core requirements of the discipline. The few courses which carry more or less than a single course credit are indicated; all others carry a single course credit. Courses regularly offering honor sections are indicated; honor registration in any course is possible subject to the approval of the instructor. Interim courses numbered W10 through W49 have no prerequisites; those numbered W50 through W99 have either prerequisites or other conditions. Courses numbered 500 and above and those marked with an asterisk (*) may be applied to 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, 210, and 202. See page 47 for a description of the program.

210 History of Science. S, natural science core. An examination of the emergence of modern science in the sixteenth and seventeenth centuries and of the major developments in the natural sciences since then. The focus is on physics, chemistry, natural history, and selected topics in biology. Particular attention is given to the philosophical and religious background of scientific ideas, to the concept of scientific revolution, and to the problems of periodization. Prerequisites: History 101 or 102 (preferred), one year of high school chemistry or physics, and one

college science course, or consent of the instructor A. Leegwater.

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

301 Introduction to Bilingual Education.* This course 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

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.

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. *Mrs. Y. Byam.*

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

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

GRADUATE COURSES

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

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

570 Workshop in Education. An intensive course for inservice teachers involving philosophy, theory, curriculum, and practice as they are brought to bear on an identified problem area of education. Although such courses may touch topics considered in regular courses, the primary focus of each workshop is on retraining teachers in newly

recognized areas of need, in new materials, and in new approaches. Workshops may be offered by any department involved in teacher education. *Staff.*

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

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

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

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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. G. Harris (chairman).*

W11 Introduction to Frisian. This course introduces students to the language, history, and culture of the Frisians. Its main aim is to help students gain some elementary facility in the reading, writing, and speaking of Frisian, but the course also includes 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. *Mr. H. Baron.*

W12 Our Daily Bread: Agriculture, Food, and World Hunger. This course deals with aspects of food production, processing, and distribution in North America and selected Third World nations. Topics include methods of food production ranging from subsis-

tence agriculture to agribusiness, a consideration of the ecological and economic implications of each, and which proposed changes, if any, Christians should consider in order to bring about greater justice in the worldwide distribution of our daily bread. A paper is required, along with an exam on the coursework and readings. *Mr. H. Aay, Mr. U. Zylstra.*

W13 Fish: A Natural Resource. Problems related to fish and their behavior are examined, with emphasis on those which touch a variety of disciplines such as politics, physical education, physics, and economics. Typical problems are: management of lakes and streams for maximum growth and development of fish; the conflict between conservationists and the Army Corps of Engineers; the complex results of introducing non-native exotic and recreational fish; the effects of commercial and Indian "treaty right" fishing on fish survival; fish as a recreational resource. Included are the use of films, a field trip to a modern fish hatchery, and outside speakers. Students will participate in three projects involving library, field, or laboratory research. A student may, as an alternative, develop a *major* project instead of two minor projects. *Mr. C. Huisman, Mr. R. Terborg.*

W14 The Ifs and Oughts of International Relations. Diplomats regularly lie to each other. Governments authorize programs of large-scale violence against other nations. Treaties are broken. Elaborate spying systems are developed. Professedly democratic governments tolerate serious violations of human rights on the part of "friendly" states. Are such things "par for the course" in international relations? Are "national self-interest" and "power politics" the ultimate categories for assessing conduct in foreign affairs? Or are there moral standards which can be brought to bear on this sphere of activity? This course, taught by a political scientist, a specialist in international law, and a philosopher, deals with these questions. Central to the investigation is a concern to articulate a Christian perspective on the proper ordering of international relations. Lectures by the instructors are supplemented by assigned readings, guest lecturers, films, and small group discussions. A short paper and final exam are required. *Mr. G. Byker, Mr. R. De Vries, Mr. R. Mouw.*

W15 Human and Artificial Intelligence. Can a machine think? This course intro-

duces students to artificial intelligence (AI) research—including a sampling of the stories, plays, and philosophical literature that interprets it—plus some current discussion about human intelligence and I.Q. Lectures, films, guest speakers, and interaction with AI computer programs. One or two short written projects and a major paper. A reading list will be available in December. *Mr. C. Orlebeke.*

W16 Common Christian Struggles. Although the Christian life is ultimately one of triumph and joy, most of us continue to struggle with low self-esteem, anger, unhappiness, guilt, doubt, confusion, apathy, or loneliness. The goal of the course is to understand better the causes and nature of such struggles and to assess the varied advice offered to Christians. Considerable reading, some tests, willingness to discuss, and a possible paper. *Mr. W. Joosse.*

W17 Classical Arts in Italy. The course pursues the relationship of the ancient classical arts to the Renaissance as found in their original forms in Italy. Early Roman art and theatres are examined at Herculaneum and Pompeii, as well as at the archeological museum in Naples. The relationship of Roman art to Renaissance art is further pursued in Rome. From there the group will travel to Ostia, Pisa, and Florence. In Florence, study concentrates on the churches and museums. In Ravenna the group will study the Byzantine mosaics and the effects of Roman art on the church architecture. The class will go to Venice, Vicenza to visit the Teatro Olimpico, Sabbioneta to visit the Court theater, Parma to visit the Teatro Farnese, and Milan to visit La Scala. In each place archeological sites, theaters, and churches of the classical tradition are studied. Lectures by Ervina Boevé and Edgar Boevé are given on location. Required readings and tests. Prerequisite: permission of instructors. Off-campus. *Mr. E. Boevé, Mrs. E. Boevé.*

W18 From "Da-Da" to Discourses: 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. Quizzes and an exam; paper for honors. *Mr. W. Vande Kopple.*

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. Course requirements include a student panel discussion and two short written reports. *Mrs. S. Roels.*

W28 Religion in Chinese Life. An encounter with Chinese ideas of sin and salvation, as seen in actual religious practice. Using slides, recordings, and texts, two ritual dramas will be given particular attention: the purification of a temple by a symbolic combat between a priest and the devil, and the liberation of a soul from hell through the burning of a writ of pardon. The aim of the course will be to develop an awareness of the universality of basic religious concerns and the variety of their ritual and credal expressions, as well as of the unique character of our own religious tradition. Students will be required to write a paper in which they compare their own faith and/or religious practice with that of the Chinese on a selected point. *Mr. J. Lagerwey.*

W50 Alternative Logics. Systems of logic are attempts to represent those concepts and relations which are indispensable for inferences. There are various alternative formal systems designed to model logical notions of ordinary language and thought. How a model is developed and why one model is preferred over another often depends on philosophical considerations. The development of the model itself is a mathematical activity, which might be elementary or quite difficult. This course considers both the mathematical and philosophical aspects of various alternative logics. Each student is required to complete a project focusing ei-

ther on the philosophical issues involved in choosing a model or the mathematical problems involved in developing one. This course may count toward a mathematics or a philosophy concentration with the permission of the chairman of the department concerned. Prerequisites: any combination of two courses from mathematics and philosophy, or consent of an instructor. *Mr. T. Jag-er, Mr. K. Konyndyk.*

W51 The Wisdom of Many and the Wit of One: The Proverb in Literature and Life.

Though the proverb is perhaps the world's most pervasive verbal artform, it is little recognized, much less studied, by many students of literature and culture. In literature its practitioners include Heraclitus, Solomon, Francis Bacon, Shakespeare, Cervantes, George Herbert, Pascal, Goethe, Kierkegaard, and Nigerian novelist Achebe. In life its practitioner is Everyman—who is often unaware he speaks in proverbs. In this course the proverb is studied with regard to form and function, and as a vehicle of worldview. It is considered within three major contexts: 1. as a single unit of expression which functions within a real-life situation; 2. as a "strategic rhetorical device" within a larger work (poem, drama, essay, or narrative); and 3. as part of a unique genre which may be termed the "proverb poem". Readings, lectures, and guest lecturers within a seminar format. Activities include the collection, creation, and dramatic enactment of proverbs. One paper. Language students may pursue a project congruent with their linguistic interests. Prerequisite: sophomore status or higher. *Mr. R. Van Leeuwen.*

W58 Radical Resocialization: The Study of "Conversion" to Alternate Lifestyles.

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? Lectures, discussions, a text, and supplementary articles; an examination, a paper, and a class presentation are required. Prerequisite: Sociology 151 or Psychology 151. *Mr. L. Sweetman.*

Academic support

E. Diephouse (director), J. Heerspink, E. Greydanus, B. Morrison, R. Stegeman, 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 returning on probation are normally required to enroll, so that instructors can provide academic counseling, course advising, and diagnostic testing. Other students can obtain any of these services or permission to take a review course by request at the ASP Office.

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 me-

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

005 Pre-College Mathematics for the Science Student. F and S, non-credit. This course is an intensive study in the mechanics of algebra, manipulation of algebraic ex-

pressions, 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 course work and considers problems of self-motivation and self-discipline, with reference both to principles of the Christian faith and to resources within the college community. 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 a history, psychology, sociology, 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 and sentence writing. 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. *Mrs. E. Diephouse.*

Art

Professor E. Boevé

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

Assistant Professor C. Young

Instructor M. Bolt

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

The minimum major program in art is 205, 209, 210, 231, 232, 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 233, 235, 236, 238, 240, 241, and Classics 221, and an approved interim course in art history. Philosophy 208 is recommended. The minor requires 231, 232, and four from 232, 235, 238, 240, and Classics 221.

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

Both the B.A. and the B.F.A. programs can be planned to provide a graphic communications emphasis, subject to the approval of the chairman.

The ten and a half course major for teachers, k-12, must include 205, 209, 215, 216, 231, 232, 310 or 311, 320 or 325, and 210 or 240. The seven course teacher education minor is 205, 209, 215, 216, 231, 232, and one studio course from 310, 311, 320, 325, 350. All art education students are required to participate in the senior exhibition during the spring semester of their senior year. The adviser for this program is Mrs. H. Bonzelaar.

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

151 Introduction to Art. F and S, core. 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. Materials fee. *Staff.*

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

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

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. *Mrs. H. Bonzelaar.*

216 Principles of Secondary Art Education. F. A course emphasizing methods and techniques of organizing and motivating art on the secondary school level. Media in-

clude clay, enameling, jewelry-making, weaving, batik, printmaking, and painting. Prerequisites: 205 and 209. *Mrs. H. Bonzelaar.*

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

310 Introduction to Sculpture.* 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. *Mr. C. Huisman.*

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

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

313 Intermediate Ceramics.* F and S. A continued exploration of the medium, in-

cluding 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.* S. A continuation of 312 with a primary concern for developing each student's skills and individual expressive direction. Materials fee. Prerequisite: 312. *Mr. C. Huisman.*

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

320 Introduction to Printmaking.* F 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. C. S. Overvoorde.*

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

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

325 Introduction to Painting.* F and S. An introduction to the use of the paint medium, primarily using acrylic paints, emphasizing techniques, materials, and visual communication. The course includes a history of the media and of its technical development. Prerequisite: 209. *Mr. M. Bolt.*

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.*

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: 350. *Mr. R. Jensen.*

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

361 Intermediate Photography. F. Continued exploration of the medium of photography in black and white with an emphasis on the development of an individual approach to photography. Basic color processes are introduced. Materials fee. Prerequisite: 360. Not offered 1983–84.

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 from a Christian perspective to integrate the study of art history, aesthetics, and the other liberal arts as well as the work in studio art. The seminar will include regular meetings with the faculty, the writing of a scholarly statement of the candidate's philosophy of art, a study

of exhibitions in art galleries and museums, and the presentation of a one-man show. Prerequisite: senior status and a concentration in art. *Mr. R. Jensen.*

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

350 **Introduction to Graphics.** *Mr. R. Jensen.*

351 **Intermediate Graphics.** *Staff.*

360 **Introduction to Photography.**

ART HISTORY

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

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

233 **Medieval Art.** F, core. A study of the mosaics, frescoes, illuminated manuscripts, sculpture, and architecture of the Christian era from the Byzantine, Early Christian, Romanesque, and Gothic periods. Slide lectures and discussions; a research paper is required. Art history majors must complete 231 and 232 before taking this course. Not offered 1983–84.

235 **Renaissance Art.** * F, core. A study of the painting, architecture, and sculpture of the fifteenth and sixteenth centuries, with a focus on the Renaissance of Italy. The course presents an historical survey of the art produced in the centers at Florence, Rome, and Venice from the late Gothic period to the High Renaissance, followed by a study of the Mannerism of the sixteenth century. *Mr. C. Young.*

236 **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). Not offered 1983–84.

238 **Origins of Modern Art: Nineteenth Century.** * 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. *Mr. C. Young.*

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 vander Rohe, and Saarinen. *Mr. E. Boevé.*

341 **Oriental Art.** F, core. A study of the sculpture, painting, and architecture of Asia Minor, India, Indo-China, China, and Japan. Major Buddhist and Islamic periods and styles are covered. Slide lectures and discussions; a research paper is required. Art history majors must complete 231 and 232 before taking this course. *Mr. E. Boevé.*

The following classics course may be included in art concentrations.

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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W50 Watercolor Painting. This course introduces traditional and contemporary techniques of watercolor. The watercolor medium developed out of the pen and ink drawings of the seventeenth century. It became very popular in the late eighteenth and nineteenth centuries with the British, French, and Dutch schools of painting, and this interest has continued into the twentieth century, especially under the Oriental influence. Slide lectures, demonstrations, and student projects. Prerequisite: 210. *Mr. C. S. Overvoorde.*

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

W52 An Adventure in Documentary Photography. A course in documentary photography combined with a bicycle tour of the Gulf coast from New Orleans to Key West which teaches the participants to observe, record, and comment on life through photography. Documentary photography is a means of conveying an idea or message which sets it apart from an ordinary

snapshot. Students will use their own cameras to express significant ideas about life, faith, the world, an experience, or a social condition that force others to think about the world in a new way. The students will meet on campus the first few days for classroom presentation on photography and documentary expression. The bicycle tour will average approximately fifty miles per day. A final presentation is required. Fee of approximately \$300. Prerequisite: permission of the instructor. Off-campus. *Mr. R. Jensen.*

W56 Current Issues in the Visual Arts. This course is devoted to examining some of the stylistic developments in the visual arts in the last ten years, along with the critical commentary of such writers as: Robert Pinchus-Witten, Carrie Rickey, Carter Ratcliffe, Donald Kuspit, and others. Special attention is given to Conceptual Art, Neo-Expressionism, Neo-Naive Painting, Political art, and New Image painting. Slide lectures, video tapes, films, assigned readings, discussions, student presentations, and field trips. Prerequisite: 232 or 240. *Mr. M. Bolt.*

IDIS W13 Fish: A Natural Resource. *Mr. C. Huisman.*

IDIS W17 Classical Arts in Italy. *Mr. E. Boevé.*

IDIS W19 The Art of Puppetry. *Mrs. H. Bonzelaar.*

Astronomy

*Professors R. Griffioen (chairman, Department of Physics), *H. Van Till
Instructor P. Naber*

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 uni-

verse; 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 descrip-

tion of cosmological models, and a discussion of possible Christian responses to them. *Miss P. Naber, 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. Not offered 1983–84.

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 Professors H. Bouma, U. Zylstra

Assistant Professor R. Nyhof

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.

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

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 who enrolled 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, 341, 346, or 352. A minor must be worked out with the adviser. 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, 341, 346, or 352. Directed teaching in biology is normally available only during the spring semester.

The adviser for biology teaching major and minor programs and for M.A.T. programs concentrating in biology is Mr. Bernard Ten Broek. The adviser for elementary teacher science education programs is Mr. Clarence Menninga of the Department of Geology.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. These majors, however, normally are not appropriate for students planning to attend graduate school in biology or for those in teacher education programs. Group majors require a minimum of 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 chairmen of the departments involved must approve each program.

The core requirement in biology is normally met by 111. Other courses designed to meet the core requirement are 215, 216, and 217. Biology 107, 131, and 105-106, when taken as a unit, also satisfy the 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. *Staff.*

106 Introductory Human Anatomy and Physiology. S. Continuation of 105. *Staff.*

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. *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. Prerequisites: 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. *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 Man-celona, 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 plus some genetic exercises. *Staff.*

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

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

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.*

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; Chemistry 113 or 104. *Staff.*

Investigative Courses

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

352 **Investigations in Ecology.*** F. 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. *Mr. H. Bouma, Mr. U. Zylstra.*

354 **Investigations in Biology: Plant Propagation.*** S. The principles and practices of plant propagation by seed, cuttage, layerage, graftage, and tissue culture are discussed in a seminar format. These techniques are examined through laboratory and greenhouse exercises. Each student will complete a research project and present a seminar on that project. Prerequisite: 201 or 221. *Mr. J. Beebe.*

Advanced Courses

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

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

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.*

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. *Mr. R. Nyhof.*

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; or permission of the instructor. *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 microorga-

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

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.*

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W10 **Biology of 1984: Clones, Chimeras, and Cancer.** This course traces the development of molecular genetics from 1953 until the present, emphasizing the current "mini-revolution" involving the genetics of higher organisms and implications for the future. The cloning of genes by recombinant DNA technology, the production of genetic chimeras by microinjection of multiple copies of cloned genes from one species into the fertilized eggs of another species, and the relationships between cellular "oncogenes" and certain forms of cancer are studied in some detail. Possible future applications of these new developments for the detection, treatment, and prevention of inherited diseases in the future are discussed, especially those regarding the ethical implications. Some attention is given to the persons who developed important new techniques and concepts which led to our present state of knowledge in molecular genetics. Class presentations, tests, and an exam are used to evaluate performance. Prerequisite: high school biology and some experience in a physical science are desirable. Biology core. *Mr. B. Ten Broek.*

W50 **Plant Tissue Culture.** An introduction to the theory and practice of aseptic culture of plant tissues and organs. Students will prepare and use culture media and materials for initiation, multiplication, and production of self-sufficient plantlets. Oral and written reports on this work are required. Readings give the factual and theoretical background for these projects. Students will participate in seminars on published papers concerning plant tissue culture. Prerequisite: 201 or 221. *Mr. J. Beebe.*

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

W53 Human Nutrition and Food. The student investigates the relationship between nutrients and 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 a series of brief lectures, considerable hands-on experience, and an ultrastructure research project. Prerequisite: 222, Chemistry 253 or 301, and the 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 deal initially with basic techniques but later center on particular problems of the biological illustrator, such as closeup and macrophotography of both dead and living materials, photomicroscopy and copying of line and continuous tone materials. The fi-

nal course project will be an illustrated short report using techniques developed during the course. Darkroom equipment and facilities are provided, but the student must provide a 35mm single lens reflex camera with manual focus, shutter speed, and aperture control. This course requires a full day's effort; therefore, the student should not schedule any other major time commitment during the interim. Student work will be evaluated by the instructor and by fellow students. The grade is based on a detailed evaluation of prints from seven projects. Fee of approximately \$65. Prerequisite: permission of the instructor. *Mr. R. Van Dragt.*

W58 How Drugs Work. The course provides a framework for understanding and evaluating the bewildering array of medications available to the consumer and the attempts to remove some of the mystery surrounding their effects. The course defines drugs and examines the determinants of prescription or over-the-counter status and the procedures legally required before introduction of a new drug. General concepts of pharmacology are discussed, including receptor sites, drug-receptor site interaction, termination of drug action, and prevalence of patient side effects. Various common pathophysiological conditions (or, illnesses) are presented, followed by the mechanisms by which selected drugs can improve or restore the patient's health. Lecture, laboratory demonstrations, and possibly some films. The grade is based on tests and a final examination. Prerequisites: 105 and 106, or 205 and 206. *Mr. R. Nyhof.*

IDIS W12 Our Daily Bread: Agriculture, Food, and World Hunger. *Mr. U. Zylstra.*

Business and accounting

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

Chemistry

*Professors R. Albers, *R. Blankespoor, H. Broene, R. De Kock, A. Leegwater, K. Piers (chairman), W. Van Doorne*
Assistant Professor T. Zwier

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, IDIS 210, or an approved interim course. The teaching minor is 103, 104, 204, 253–254 or 301–302, 396, and either a chemistry elective or an approved interim course.

The teaching group major in chemistry and physics consists of Chemistry 103–104 and 253–254 or 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, 396, Physics 380, and 382.

The adviser for elementary education programs in science is Mr. Clarence Menninga of the Geology Department; the adviser for secondary education 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 chairmen of the three departments involved must approve each program of this type.

The physical science core may be met by 110.

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

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. *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. W. Van Doorne.*

113 Fundamentals of Chemistry. F. This course is the first of two required for the B.S.N. program. It also serves students in elementary education and certain paramedical programs needing a course in general chemistry. The fundamental concepts of chemical science are presented together with selected topics in descriptive chemistry. Emphasis is placed on the language of chemistry, the mole concept, chemical bonding, stoichiometry equilibrium processes, and periodicity. Laboratory. Prerequisite: one year of high school chemistry or permission of the department. *Mr. H. Broene, Mr. R. De Kock.*

114 Introduction to Organic and Biochemistry. S, core. A study of the fundamental classes of organic compounds, their syntheses and reactions, followed by a survey of compounds and chemical changes occurring in living systems, of photo-

synthesis, metabolism, respiration, etc. Laboratory. Prerequisite: 113. *Staff.*

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

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. *Mr. H. Broene.*

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

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

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. Prerequisites: 201 and 277. *Mr. T. Zwier.*

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. A. Leeguwater, Mr. K. Piers.*

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

303 **Biochemistry.*** F. A study of proteins, carbohydrates, lipids, enzymes, coenzymes, 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. K. Piers.*

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. *Mr. R. De Kock.*

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. T. Zwieter.*

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. K. Piers.*

JANUARY 1984 INTERIM

W50 **DNA Cloning.** A laboratory course in DNA manipulation. The student is introduced to the techniques of DNA isolation, restriction, sizing, recombination, and cloning. Some theory appropriate to the above techniques is dealt with also. Grade will be based on laboratory performance and formal lab reports. Prerequisite: 303 or permission of the instructor. *Mr. R. Albers.*

W53 **Environmental Chemistry.** A study of the atmosphere, natural waters, and soil systems. The course includes a study of the impact of human industrial activity on the environment, as well as some focus on regulation of toxic substances. Problem assignments, tests, and student reports may be expected. Prerequisite: 253, 301, or equivalent. Satisfies chemistry minor concentration and secondary education chemistry major concentration. *Mr. K. Piers.*

102 **Introductory Chemistry.** *Staff.*

Classical languages

*Professors G. Harris (chairman), R. Otten, R. Wevers
Associate 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 Greeks and Romans and of the later influence of that culture. The Classical Languages program is designed for graduate studies, the Greek language program is for preseminarians and for any others wishing to concentrate in Greek language and literature, and the Latin language program is for those intending to teach the language at the secondary school level and for any others wishing to concentrate in Latin language and literature. Modified concentrations are available to other students.

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

The Classical Civilization program consists of ten courses and one interim, all selected in consultation with a member of the department. The course requirements, besides the approved interim course, include: two courses, at the 200 level or above, in Greek language (one of which may be in New Testament Greek) or in Latin language; Classics 211, 221, 231; Philosophy 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, Communication 325, Communication 317, or additional courses (at 200 level or above) in the selected language.

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

The Greek language program requires six courses selected from: Greek 101–102, 201–202, 203–204, 205, 206, 301, 302; and two additional courses selected either from this group or from Classics 211, 221, 231, 311, 312, History 301. At least one course must be a 300-level Greek language course. The recommended 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-professional programs may be met by Classics 211. Classics 231, Classical Mythology, may be part of the teaching minor in the Academic Study of Religions.

CLASSICS

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

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. Not offered 1983-84.

202 **Intermediate Greek A.** S, core. Readings in Homer's *Iliad*. Attention is given to the characteristics of Homer's world. Prerequisite: 201 or 203. Not offered 1983-84.

203 **Intermediate Greek B.** F. Readings in Herodotus. Special emphasis is put on gaining reading proficiency in Greek prose, with some attention to the characteristics of Herodotus as historian in relation to Thucydides. Prerequisite: 102. *Mr. R. Wevers*.

204 **Intermediate Greek B.** S, core. Readings in the Attic orators and Plato's *Apology*. Attention is given to certain matters of style. The readings are viewed in relation to, and as documentation for, the history of fourth-century Athens. Prerequisite: 203 or 201. *Mr. R. Wevers*.

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

uisite: 205 or 206. Offered in alternate years. Not offered 1983-84. *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. Not offered 1983-84. *Mr. G. Harris.*

JANUARY 1984 INTERIM

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 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. Lectures, discussions, reports, slides, films, and an examination. *Mr. K. Bratt.*

W50 **Review Greek.** This course is intended for students who have completed Greek 101. There are no assignments beyond what can be done in the hours when the class actually meets. 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 **Elementary Latin.** *Mr. R. Otten.*

Communication arts and sciences

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 200 and one other course. In addition to a general major, the department offers majors with emphases in theater and telecommunications as well as teacher education concentrations in speech. Not more than one course unit of 220 may be applied to a major.

The general major requires 200, 203, an interim course, and five and one-half additional courses selected in consultation with a departmental adviser. Recommended cognates for students interested in oral interpretation and drama include aesthetics, history of art, introduction to musical literature, Shakespeare, and non-Shakespearean drama of the Renaissance; for those interested in speech education or speech correction, child psychology, psychology of exceptional children, descriptive statistics for the social sciences, anatomy, and physiology; for those interested in communications and rhetoric, cognate courses are chosen with the student's adviser.

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

Students wishing an emphasis in telecommunications—broadcasting, cable, and satellites—should take 150, 200, 203 or 219, 230, 251, 252, and at least two of the following: 226, 253, 325, an approved interim course, an elective approved by the adviser.

The secondary school teaching speech 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 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 may participate in debate tournaments, forensic contests, and an interpretative reading festival sponsored by the league.

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

The core requirements in spoken rhetoric may be met by 100, 200; 214, if the student is in an elementary education program; 240; or by an examination, which presupposes formal and practical speech training in high school. The fine arts core requirement may be met by 203, 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. S. Study of the nature of human communication, 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, participation in various types of discussion, readings in rhetorical theory, and criticism of selected contempo-

rary speeches. Prerequisite: 100 or equivalent. *Mr. M. Vande Guchte.*

211 Debate. F, half course. The forms and procedures of academic debate. Knowledge and competence in debating, judging, and coaching are course goals. Designed for debaters and prospective coaches. *Mr. L. Van der Meer.*

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.*

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 1983–84.

TELECOMMUNICATIONS

226 History of Communications. S. This survey of the history of communications technology is divided into three major sections: oral culture before the alphabet and during the manuscript period; print media beginning with the printing press, including modern newspapers and magazines; electronic media from the telegraph to television, cable, and satellites. This course studies the relationship among the three, examining the implications for contemporary culture. *Mr. C. Christians.*

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.*

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

252 Communication Ethics. F. The moral and ethical dimensions of human communication with special reference to mass communication. Comparisons are made of the major standards of conduct used to make judgments about appropriate communication behavior. Public vs. private communication dilemmas are discussed. The various kinds of lies and rationalizations are analyzed. Responsibilities in mass communication practice, including public relations, reporting, advertising, and editorializing are discussed in the context of case studies. *Mr. C. Christians.*

253 Popular Culture in Television. F. The study of various important cultural forms in television, including drama, news, and documentary. Students analyze the conventional television genres including situation

and domestic comedies, westerns, detective shows, mysteries, soap operas, and adventure series. Course topics include: defining television art, the relationship between program content and social values, assumptions about human nature, and television's treatment of God and religion. Open also to students who took W11, Popular Culture in the Mass Media, during the interim. *Mr. Q. Schultze.*

305 Persuasion and Propaganda. The theory and practice of persuasive communication. Special emphasis on forms of mass communication used to change mass attitudes and mobilize publics. Use of rhetorical principles to evaluate persuasive appeals. The differences between propaganda and persuasion. Comparisons of political and economic propaganda. Included for analysis are examples from current international shortwave broadcasts; corporate image, political and product advertising; religious broadcasting techniques. Not offered 1983-84.

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 understand and correct minor defects and to handle speech improvement in the classroom. The course will also serve to introduce the student to the profession of speech pathology and audiology. *Mr. M. Vande Guchte.*

307 Structures and Functions of the Speech Mechanisms. S. A study of the anatomy and physiology of the speech mechanisms, the involvement of the nervous system in the control of speech, and the acoustic characteristics of speech production. Prerequisite: 215. *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. Pre-

requisite: permission of instructor. To be offered 1984-85. *Mr. M. Vande Guchte.*

THEATER AND ORAL INTERPRETATION

203 **Interpretive Reading.** F and S, core. A study of the history, principles, and techniques of interpretation. Analysis and oral interpretation of prose, 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** F. 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.*

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

304 **Advanced Interpretation.** S, core. Continuation of 203. Application of its principles to the novel and drama. Intensive study in preparation for a reading program. Prerequisite: 203. Not offered 1983-84.

317 **History of Theater and Drama.** F, core. A historical and analytical study of theater and drama from its origins to the eighteenth century. Not offered 1983-84.

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

319 **Design for Theater.** S. A study of the theories and principles of theater design. This course builds on the principles taught

in 219 and includes lectures, demonstrations, reading of plays, and the development of competence in set, light, costume, make-up, property, and publicity design. Prerequisites: 217, 219, or permission of instructor. Not offered 1983-84.

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 1984 INTERIM

W10 **Speech and Hearing Rehabilitation.** An exploration of the profession which deals with speech and hearing rehabilitation. Students will study the development and growth of the profession, and the ethical, social, and political issues it faces today. An examination of the training programs for speech-language pathologists and audiologists will be followed by direct contacts with professionals in these fields. Class lectures and discussions are supplemented by guest lecturers and by field trips to Kent Community Hospital, Hearing and Speech Center, Michigan State University, and Elim Christian School. Readings in professional texts and journals; oral and written reports. Travel fee of \$25. Psychology 216 and/or Communication 215 provide helpful background. *Mr. M. Vande Guchte.*

W11 **The Black Theater.** Black actors, playwrights, and technicians have left their mark on the theater in the United States and Canada. Students in this course will study the leading figures in this movement: Lorraine Hansberry, LeRoi Jones, Ed Bullins, Douglas Turner Ward, Lonnie Elder III, Charles Gordone, and the Nigerian Wole Soyinka. Lectures, readings, discussions, guest presentations, films, and a field trip. A text and an examination are required. *Mr. J. Korf.*

IDIS W17 **Classical Arts in Italy.** *Mrs. E. Boevé.*

IDIS W19 **The Art of Puppetry.** *Mr. D. Holquist.*

Computer science

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

Associate Professors D. Brink, †M. Stob

Assistant Professor W. Dyksen

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

A major program of concentration in computer science consists of 151, 152, 243, 251, 392, and five additional courses selected from Mathematics 243, 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 243, 343, Computer Science 252, 285, 335, 370, 385, and an approved interim.

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

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. *Mr. W. Dyksen.*

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: Mathe-

matics 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 opera-

tions, 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. L. Nyhoff.*

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

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. *Mr. L. Nyhoff.*

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

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 system 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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W50 **Operating Systems and Concurrent Programming.** Concurrent programming has been used for many years in writing parts of operating systems, such as device managers. But it is only recently that convenient, high-level constructs have been developed to handle these problems well. This course surveys the older, low-level concur-

rency mechanisms, such as semaphores and interrupts, and then concentrates on a structured approach to concurrent programming based on monitors. Topics include principles of operating systems, correctness, timing, the mutual exclusion problem, Dekker's Algorithm, producer-consumer systems, monitors and semaphores. Prerequisite: 243, 252, or permission of an instructor. *Mr. S. Leestma, Mr. L. Nyhoff.*

W51 Database Management Systems. Introduction to application program development in a database environment with an emphasis on loading, modifying, and querying the database in a host language (COBOL). Discussion and application of data structures, indexed and direct file organizations, models of data including hierarchical, network, and relational. Discussion of storage devices, data administration and analysis, design, and implementation. Prerequisite: 131 or permission of an instructor. *Mr. S. Anema, Mr. W. Dyksen.*

W53 Computer Graphics. This course includes almost any non-alpha/numeric CRT display of information which is generated

by the computer. Transformations in homogeneous coordinates are among the many crucial tools developed in this course. Various concatenations of three simple matrix operators are studied in order to create algorithms needed to give a desired GRAPHICS display. These operators are studied in two and three dimensions. Splines in both two and three dimensions are presented along with spline applications. The quaternion operator is also introduced as an efficient alternative in certain applications. A primary objective in this course is to provide an environment for exercising individual creativity in applications. Each participant will declare at least one graphics project and share interests and/or particular insights with the class. A wide variety of mathematical models, algorithms for a variety of special applications, microprocessors, PC's, etc., will be derived and/or discussed and demonstrated in class. Field trip to visit the scene of graphics applications in the "outside world". Prerequisite: three semesters of calculus and a course unit of computer science, or permission of the instructor. *Mr. J. Kuipers.*

Dutch

Associate Professors M. Bakker (program coordinator), 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. *Mr. M. Bakker.*

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

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

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

JANUARY 1984 INTERIM

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. M. Bakker.*

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

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

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

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

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

W50 Interim 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 them an opportunity to develop listening and speaking competence in the Dutch language. They will also become acquainted 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 ranging 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. Written reports and a journal. Fee of approximately \$1,200. Prerequisite: three semesters of Dutch and permission of the instructor. Off-campus. *Mr. M. Bakker.*

Economics and business

Professors †G. Monsma, D. Pruis

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

Assistant Professors J. Dodge, D. House, S. Roels, R. Slager

Instructors R. Hoksbergen, A. Pereboom, D. Rietberg

THE DEPARTMENT OFFERS four majors leading to a Bachelor of Arts degree—business, economics, a group concentration in the social sciences, and a group concentration involving mathematics and economics or business—as well as a program leading to a Bachelor of Science in Accountancy. The department also offers minors in business, in economics, and teacher education majors and minors.

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

The B.S. in Accountancy requires Business 201, 202, 301, 302, 305, 350, 360,

370, 380, three courses from Business 306, 310, 311, and 315, four courses in economics, the mathematics cognate, and the computer science cognate. Business 319 is a recommended elective. Students wishing to meet C.P.A. requirements should consult with an accounting faculty member.

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

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

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

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

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

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

BUSINESS

- 201 Introduction to Financial Accounting.** F. An introduction to accounting with emphasis on principles of asset valuation and income determination. Prerequisite: completion of or concurrent registration in 151 or 221. Not open to freshmen. (Previously 207) *Mr. L. De Lange, Mr. D. Pruis, Mr. R. Slager.*
- 202 Financial and Managerial Accounting.** S. A continuation of 201 emphasizing consolidated financial statements. The course provides an introduction to cost accounting, budgeting, the development of controls, and the use of financial analysis for managerial decision-making. Prerequisite: 201. (Previously 212) *Mr. L. De Lange, Mr. D. Pruis, Mr. R. Slager.*
- 301 Intermediate Accounting I.*** F. A study of financial accounting theory and generally accepted accounting principles as applied to the measurement and valuation of assets and liabilities. Prerequisite: 202. (Previously 307) *Mr. K. Kuipers.*
- 302 Intermediate Accounting II.*** S. Continuation of 301. A study of financial accounting theory and generally accepted accounting principles as applied to the measurement and valuation of stockholders' equity, issues related to income determination, and preparation and analysis of corporate financial statements. Prerequisite: 301. (Previously 308) *Mr. K. Kuipers.*
- 305 Cost Accounting.*** S. Principles and methods of accounting for manufacturing and operating costs with emphasis on analysis and reporting to management to facilitate planning, control, and decision-making. Prerequisite: 202. (Previously 312) *Mr. J. Mellema.*
- 306 Income Tax.** 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: 201. (Previously 209) *Mr. L. De Lange.*
- 310 Advanced Accounting.*** F. Preparation of consolidated financial statements, accounting for partnerships, and accounting for installment and consignment sales. Introduction to governmental and fund accounting. Prerequisite: completion of or concurrent registration in 301. *Mr. D. Pruis.*
- 311 Auditing.*** S. The theory and philosophy of auditing, including an examination of the ethical and other professional standards required of the Certified Public Accountant. Prerequisite: completion of or concurrent registration in 301. *Mr. K. Kuipers.*
- 315 Accounting Systems.*** S. A study of accounting systems and their design including procedures, cycle flow, internal controls, and tools of systems analysis. Emphasis is placed on systems analysis techniques and design for manual and computerized systems. Prerequisite: 202 and one course in computer science. *Mr. R. Slager.*
- 319 Topics in Public Accounting.*** S. Studies in selected areas of CPA practice which are often covered in the Uniform CPA Examination: fund accounting for governmental and not-for-profit entities; advanced taxation including taxation of corporations, partnerships, estates, trusts, and gifts; law of accountancy and other selected business law topics. Prerequisites: 306, 310, 350. Not offered 1983-84.
- 325 Managerial Economics.*** F and S. An intermediate level course in microeconomic theory emphasizing applications to managerial decision-making in the areas of production, marketing, and hiring of resources. Goals of firms and the use of economic theory in achieving them will be examined and evaluated. Also listed as Economics 325. Students may not receive credit for both this course and Economics 323. Prerequisites: Economics 151 or 221 and completion of or concurrent registration in Mathematics 131, 243, or 343 and in Mathematics 132 or 161. *Mr. J. Dodge.*
- 326 Business Cycles and Forecasting.*** F and S. An intermediate level course in macroeconomic theory emphasizing analysis of general business activity and the implications of changing business conditions for business and public policy. Basic forecasting techniques are explained and the use of forecast information in firm and individual decision-making is evaluated. Also listed as Economics 326. Students may not receive credit for both this course and Economics 324. Prerequisites: Economics 151 or 222 and

completion of or concurrent registration in Mathematics 131, 243, or 343. *Mr. E. Van Der Heide.*

350 Law in Business.* F and S. An introduction to American business law: origins, development, legal institutions, and processes. The legal environment of business; Uniform Commercial Code and case law of business transactions; other topics selected from agency, property, partnership, corporation, regulatory, and administrative law. (Previously 309) *Mr. D. Buter, Mr. T. Waalkes.*

360 Business Organization and Management.* F and S. A study of the principles and problems of organizing and managing the firm, with emphasis on organization goals, structure, and the effective use of human resources. Not open to freshmen. (Previously 313) *Mr. D. House, Mrs. S. Roels.*

365 Personnel Management.* F and S. A study of the principles and problems involved in personnel management in an organization, including recruitment, selection, training, evaluation, motivation, compensation, human resource planning, career development, and collective bargaining. Prerequisite: 360 or permission of the instructor. (Previously 314) *Mr. D. House.*

370 Financial Principles. F and S. A study of the principles and problems of the financial management of the firm, including such topics as stock and bond valuation, working capital management, cost of capital and capital budgeting, capital structure, and dividend policy. Prerequisites: 151 or 221 and 201. (Previously 316) *Mr. J. Mellema, Mr. D. Rietberg.*

371 Financial Instruments and Markets.* S. An extension of 370 into topics such as leasing, mergers, and multinational finance; application of the theory of finance to investment instruments, including stocks, bonds, options, futures markets, and commodities, and to financial markets and institutions, including investment companies and the stock exchanges. Prerequisite: 370. (Previously 317) *Mr. D. Rietberg.*

380 Marketing. F and S. A study of the principles and problems involved in the optimal administration of the marketing function in the firm, including production and promotional policy, price determination, and distribution channels. Prerequisite: 151 or 221. Not open to freshmen. (Previously

318) *Mr. D. House, Mr. D. Rietberg, Mrs. S. Roels.*

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

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

ECONOMICS

151 Principles of Economics. F and S, core. A study of the principles of resource allocation, income distribution, prices, production, income and employment levels, and economic growth with an emphasis on the market system. The course is planned to help students understand basic domestic and international economic problems. *Mr. E. Beversluis, Mr. R. Hoksbergen, Mr. A. Pereboom, Mr. E. Van Der Heide.*

221 Principles of Microeconomics. F and S, core. A study of the behavior of consumers and firms and their effects on prices, production of goods and services, use of resources, and the distribution of income; with an evaluation of the equity and efficiency of private sector and governmental activity in a market system. *Mr. E. Dykema, Mr. A. Pereboom, Mr. J. Tiemstra.*

222 Principles of Macroeconomics. F and S. A continuation of 221. A study and evaluation of the determination of national income including analysis of consumer spending and saving patterns; business investment; government spending, taxation, and monetary policy; unemployment; and inflation. Prerequisite: 221. *Mr. E. Dykema, Mr. A. Pereboom, Mr. J. Tiemstra.*

323 Intermediate Microeconomics.* F and S. An intermediate course in microeconomic theory, emphasizing the role of the price system in organizing economic activity and an evaluation of its efficiency and equity. Students may not receive credit for both this course and Economics or Business 325. Prerequisite: 151 or 221. (Previously 322) *Mr. E. Beversluis.*

324 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. Students may not receive

credit for both this course and Economics or Business 326. Prerequisite: 151 or 222. (Previously 321) *Mr. R. Hoksbergen.*

325 Managerial Economics. F and S. An intermediate level course in microeconomic theory emphasizing applications to managerial decision-making in the areas of production, marketing, and hiring of resources. Goals of firms and the use of economic theory in achieving them are examined and evaluated. Also listed as Business 325. Students may not receive credit for both this course and Economics 323. Prerequisites: Economics 151 or 221 and completion of or concurrent registration in Mathematics 131, 243, or 343 and in Mathematics 132 or 161. *Mr. J. Dodge.*

326 Business Cycles and Forecasting. F and S. An intermediate level course in macroeconomic theory emphasizing analysis of general business activity and the implications of changing business conditions for business and public policy. Basic forecasting techniques are explained and the use of forecast information in firm and individual decision-making are evaluated. Also listed as Business 326. Students may not receive credit for both this course and Economics 324. Prerequisites: Economics 151 or 222, and completion of or concurrent registration in Mathematics 131, 243, or 343. *Mr. E. Van Der Heide.*

331 Money and Banking.* F. A study of the principles of money, banking, and credit with emphasis on monetary theory and policy and their role in domestic and international economics. Prerequisite: 151 or 222. *Mr. J. Dodge.*

332 Environmental Economics and Public Policy. S. An introduction to the theory and practice of environmental policy. The course provides a survey of the problems considered by environmental economics and an evaluation of the policies that have been developed—problems related to pollution and other forms of environmental deterioration, to the use of energy and other resources, and to related issues. Prerequisite: 151 or 221, or permission of instructor. (Previously 232) *Mr. J. 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 or 221. *Mr. J. Tiemstra.*

335 Labor Economics.* S. A study of labor markets and their relationship to the economy as a whole, with an emphasis on wage theory, the impact of trade unions, unemployment, income distribution, human capital formation, labor force participation, and public policies concerning such topics. Prerequisite: 151 or 221. Not offered 1983–84.

336 Comparative Economic Systems.* F. A comparison of various forms of economic organization, such as capitalist and socialist types, and an evaluation of their performance in theory and practice. Prerequisite: 151 or 221. *Mr. E. Beversluis.*

337 World Poverty and Economic Development.* S. A study of the causes of widespread poverty in many nations and regions of the world, and a study and evaluation of policies designed for its alleviation. Prerequisite: 151 or 221. *Mr. E. 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 or 222. *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 or 221. Not offered 1983–84.

345 History of Economic Thought.* S. An examination of the development of economic ideas with an emphasis on the emergence of main historical themes, issues, and controversies. Prerequisite: 151 or permission of the instructor. (Previously 342) Not offered 1983–84.

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 students planning to pursue graduate studies. Emphasis on oral and written reports and on extensive reading in current economic journals. Prerequisites: senior major rank and consent of the instructor. Not offered 1983–84.

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W10 Introduction to Business for Non-Business Majors. This course is designed to introduce non-business majors to the world of business. Students study such topics as financial and managerial accounting, finance, marketing, personnel administration, and general management. Students will gain a general understanding of and appreciation for the basic tools of business, as well as assist in developing a Christian perspective on the roles and responsibilities of business in a sinful world. Primarily lectures, but also some use of case studies, outside readings, and small group discussions. A comprehensive final exam. This course is particularly appropriate for non-business students who intend to seek a career in business and industry. Not open to current business or economics majors. *Mr. D. Rietberg.*

W11 Accounting for Non-Business Majors. This course is designed for non-business majors who desire to learn how to use accounting as a source of information. Students are exposed to an overview of all aspects of accounting. Basic concepts of financial and managerial accounting, as well as the interpretation and analysis of the information generated by accounting systems are studied. The course also includes the use of financial reports by investors and government agencies, and the function of accounting in not-for-profit organizations. Evaluation of students will be based on completion of daily assignments and tests given during the course. Not open to business and economics majors or prospective majors. *Mr. R. Slager.*

W50 Finance and Business in New York. After preparatory study on campus, a week is spent in New York studying financial institutions and markets; meeting with financial executives and visiting such institutions as stock exchanges, Federal Reserve Bank, New York Society of Security Analysts, and insurance company or mutual fund intermediaries. Depending on student interests, a portion of the time in New York can be arranged to accommodate special interests in accounting, management, or marketing. The course examines the role and evaluates the performance of financial institutions and markets in the financial system. Coverage includes recent innovations in the system. Selected investment instruments will

be analyzed by students to determine how prices are set and how balance is achieved between risk and return. Course work includes readings, class discussion, and a written report. Initial information and planning meeting on September 26. Estimated fee of \$400 for travel to and lodging in New York. Prerequisites: 151 and permission of the instructors. *Mr. K. Kuipers, Mr. D. Pruis.*

W51 Economic Decline and Industrial Policy. This course examines the recent evidence of industrial decline in the United States and the various proposals for developing a government industrial policy. Causes of declining rates of productivity increase, poor performance of older heavy industries, increased foreign penetration of industrial markets, and simultaneous increases in inflation and unemployment are examined. Students read and report on many recent books and articles proposing various forms of industrial policy for the U.S. A written examination. Prerequisite: Economics 151 or 221. *Mr. J. Tiemstra.*

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 306) applicable to business firms and non-profit organizations. Provisions of each tax are studied, with applications to a variety of situations in problem assignments. The course includes an evaluation of the provisions of the taxes studied and the tax impact on different types of firms within a state as well as those in interstate business. Tests and projects. Prerequisite: 201. *Mr. L. De Lange.*

W53 Production and Operations Management. The course introduces the student to the management of production processes within the business firm. The student will examine how production forecasts are developed and utilized. Emphasis is on the design of production systems—including capacity and location planning, product and service design, and facilities layout—as well as proper techniques for operating and controlling them. Topics covered include inventory management, material requirement, planning, and quality assurance. Quantitative and computer applications will reflect the current state of production management practice. A text is required. Class discussion, case studies, and visits to local business operations. A midterm and final

exam are required. Prerequisite: 360 and Mathematics 132 or its equivalent. *Mr. E. Van Der Heide.*

W55 Economic Aid to the Third World. One of the most frequent questions that arises in discussions of world hunger and Third World poverty is "What can we do to help". This is by no means an easy question to answer. Students in this course will examine and analyze advantages and disadvantages of different approaches to assisting the people of the Third World at global, national, denominational, and personal levels. Special attention is focused on the aid approaches of voluntary agencies and, within this group, the Christian agencies. Lectures, student presentations, guest speakers, and films. Students will write term papers on relevant topics of personal interest. Prerequisite: Economics 151 or permission of the instructor. *Mr. R. Hoksbergen.*

W56 Field Study in Management. Students will visit a number of places in the metropolitan Grand Rapids area and learn about management in a wide variety of fields from experts with years of experience. They will see management in action in large and small, profit and non-profit, product and service, civilian and governmental organizations and will listen, observe, and ask questions at these visits. Daily reports on visits and reading assignments. Group class

discussions are held periodically. There will be a final written report. Text: Peter Drucker, *People and Performance*. Prerequisite: registration as a senior business major. *Mr. D. House.*

W57 Managing Your Own Small Business. The course goes step by step through the procedures that should be taken before starting a new business, i.e., feasibility study, researching a venture, selecting a business, and financing a new business. Similar procedures for the purchase of an existing business are studied, and management procedures for operating the business after it has been started or purchased are explored. Text, supplemented by lectures from successful operators of small businesses, and augmented by the management experience of the instructor. Students will submit a written proposal for starting a business they would like to own and operate and will present this same proposal to the class orally for evaluation. The proposal must include: plan, market opportunity, promotion, competition, management and organization, operating statement, and balance sheet. Prerequisites: Business 201 and 360. *Mr. E. Hoogstra.*

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

HIST W51 Total War: A History of World War II in Europe. *Mr. J. Dodge.*

Education

*Professors P. De Boer, T. Hoeksema, C. Kass, P. Lucasse (chairman), C. Mulder, D. Oppewal, L. Stegink, D. Westra, **J. Wiersma*
Associate Professors K. Blok, B. Bosma
Assistant Professor W. Hendricks

THE VARIOUS TEACHER EDUCATION PROGRAMS are described in detail on pages 49-54. 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 eight 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 secondary teachers for applying principles of reading in daily assignments; demonstrations of techniques for meeting the wide range of reading levels found in the average secondary classroom; a review of formal and informal tests of pupil reading levels; and introduction to interpretation of test scores for screening and determining pupil reading needs. Prerequisite: 307. *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 organization and management of a classroom reading program. *Mrs. B. Bosma, Mrs. K. Blok.*

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

325 Reading and Language Arts in the Elementary School.* F and S, half course. A study of reading as a language art and its relationship to the various subjects in the elementary school. Prerequisite: 322. *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. *Mr. W. Hendricks and staff.*

346 Directed Teaching: Secondary.* F and S, one to three course units. Students participate in a full-time supervised practice-teaching experience in their major or minor field. Each course unit of 346 involves at least ninety clock hours of actual teaching. 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. Prerequisites: good standing in the teacher education program and appropriate recommendations. *Mr. L. Stegink and 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. *Mr. W. Hendricks and 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. *Mr. L. Stegink and 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. The theories of Kohlberg and of Raths and Simon are studied. Individual projects and construction of teaching units. *Mr. D. Oppewal.*

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

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

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 develop-

ment 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 dif-

ferences 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 Textbooks on Trial. This course provides a survival kit for future teachers who may find that they are using controversial textbooks and teaching materials in their own classrooms. They will examine typical k-12 teaching materials for bias—sexism, racism, secular humanism, sex education, and evolution-creationism. Lectures and readings on recent legal battles over textbooks will provide guidelines for determining what schools can do in controversies over such matters. Students will develop critique papers on textbooks involving bias in at least two areas. *Mr. D. Oppewal.*

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 visits with personnel from agencies serving children. *Miss D. Westra.*

W50 Building Integrated Teaching Units. Elementary teacher education students must create and teach integrated units during their directed teaching semester. Often they have neither sufficient time to develop such units nor time to understand the curricular theory on which the units are based. This course aims to prepare those students about to begin student teaching for this aspect of their work and to prepare those who have already completed student teaching for their work in the classroom. Students will read *Shaping School Curriculum: A Biblical Approach* by Steensma and Van Brummelen and *Educating for Responsible Action* by Wolterstorff. Lectures and discussions of the theoretical basis for an integrated curriculum, instructions for building integrated units for the elementary classroom, and daily supervision of the work being developed. Using the resources of at least the Curriculum Center, students will be expected to develop at least one integrated teaching unit on which they will be evaluated. Prerequisite: 301-303 or permission of the instructor. *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 give daily supervision and conduct weekly seminars. Mr. Lucasse leads a concluding seminar during the first week of second semester. Fee of approximately \$100. Prerequisite: permission of the coordinator. Off-campus. *Mr. P. Lucasse.*

W52 Children Learn Language by Using It. Children don't learn language by filling in workbooks but by using language to communicate—by listening, reading, speaking, and writing. By using language to communicate, they build their language skills, broaden their vocabularies, and learn to put their ideas into sentences and arguments. They also learn what language cannot do. This course shows prospective teachers how all the language arts are part of a single communication pattern and how to go about teaching them as a common, integrated experience. Lectures, demonstra-

tions, films, and assigned readings, primarily from D. G. Hennings, *Communication in Action*. Students will present oral and written reports, prepare teaching "episodes" from options in the text, and be involved in field experiences. Ideal background is 301-303 or 322 and some kind of classroom experience. *Mrs. P. Oostenink.*

W53 Curriculum and Methods for Multi-grade Classrooms. Students will be placed in an off-campus multigrade classroom where, because of the spread of pupil ability, they will be able to use individualization teaching techniques and peer tutoring. Special attention is given to management skills for both curriculum and scheduling in the class. The course includes lesson planning, tutoring, teaching, required readings, and maintaining a daily journal. The classroom teacher and principal provide daily supervision and weekly seminars. Mr. Lucasse conducts planning seminars during the fall semester and a concluding seminar after the interim. Fee of \$100 for room and board. Prerequisite: permission of the coordinator. Off-campus. *Mr. P. Lucasse.*

W54 Teaching in the Middle School. Students in this course study the characteristics of junior high school students (those in grades 5 through 9), the theory that has developed about teaching such students, and the various teaching styles that are appropriate for that level. These strategies include small group work to increase motivation and thinking skills. The course is taught in the junior high of a local Christian school where students will observe various kinds of pupils and teachers, as well as various teaching styles and lesson plans. Textbook, readings on alternative styles, lectures. Students will write appropriate lesson plans for a particular class and will have an opportunity to teach one or more classes. Prerequisite: sophomore status and permission of instructor. *Mr. C. Mulder.*

W55 Teaching Reading in Rehoboth, New Mexico. This course is conducted at the Rehoboth (New Mexico) Christian School and is primarily concerned with the ways one teaches reading to Navajo Indian students, taking into account their cultural and language backgrounds. Students will teach mornings using language-encounter and literature-based reading methods. Seminars and planning sessions will be held during the afternoons and will include topics such as: reading development, evaluation of reading progress, evaluation of instructional strategies and materials, and the management of differentiated reading experiences. Written reports and group discussions. Field trips to Zuni and Crown Point Christian Schools. Reading assignments are made in December. Fee of approximately \$365. Prerequisite: 322. Off-campus. *Mrs. B. Bosma.*

W56 Teaching About Disability Through Puppets. Most children have misconceptions about people who have disabilities. The central goal of this course is to find ways to allay prejudices and fears about disability and to help handicapped and non-handicapped children interact and learn together. Students will become familiar with several disabilities, study theory about attitudes toward people who have disabilities and about attitude change, and develop educational materials on disability which are appropriate for use in elementary classrooms. A major course experience is training in the use of the "Kids on the Block", a group of child-sized puppets, some with disabilities and some without. Students are asked to commit themselves to a minimum of one half-hour performance per month in local schools during the spring semester. Not open to seniors. Prerequisite: permission of the instructor. *Mr. T. Hoeksema.*

307/308 Content Area Reading: Process and Skills; Methods of Teaching. *Mrs. K. Blok.*

Engineering

Professors J. Bosscher (chairman), C. Prince, L. Van Poolen
Associate Professors J. Bandstra, M. Vander Wal
Instructors †R. Hoeksema, †K. Peterson

CALVIN COLLEGE offers a four-year program leading to a Bachelor of Science in Engineering degree (B.S.E.) with concentrations in civil, electrical, and mechanical engineering as well as a three-year program for students wishing to transfer to another engineering school. For details of both programs see page 67.

A group major in engineering and physics or geology may be appropriate for some students. The group major in engineering and geology consists of Engineering 101, 202, 205, and 305; Geology 151, 152, 201, and 212; plus four approved electives. The group major in engineering and physics consists of twelve courses. Ten of these must be from the engineering and physics departments, with no fewer than four from either. The remaining two cognate courses must be chosen from a third department.

101 Graphical Communication and Concept Design. F. Graphical techniques for spatial analysis; a study of basic topics in engineering drawing to provide facility in the transmission of ideas through accepted graphical means. Areas covered include orthographic projection, free-hand sketching, pictorial representation, auxiliary views, sections and conventions, basic dimensioning, and tolerancing; an introduction to the design process by means of lectures and assigned engineering projects. Readings are also assigned in design-related areas of creative thinking, aesthetics, models, economics, and human satisfaction. *Staff.*

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

103 Architectural Communication and Concept Design. F. Graphical techniques for spatial analysis; a study of basic topics in architectural drawing to provide facility in the transmission of ideas through accepted graphical means. Areas covered include orthographic projection, free-hand sketching, pictorial representation (including perspective), sections and conventions, basic dimensioning, shade and shadows, and charts and graphs. The student is introduced to the design process by means of lectures and assigned architectural projects. Readings are also assigned in design-related areas of creative thinking, aesthetics, economics, and human satisfaction. *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, 186, and concurrent registration in Mathematics 261. *Staff.*

205 Principles of Materials Science. F. An introductory course in the science of engineering materials. Engineering properties

are correlated with internal structures; atomic, crystal, micro, macro, and service environments; mechanical, electrical, thermal, chemical, magnetic, and radiation. Prerequisite: Chemistry 103. *Mr. J. Bandstra, Mr. J. Bosscher.*

206 Introduction to Circuit Analysis and Electronics. S. An introduction to the theory of electronic circuits and devices and their applications. The following are included: basic A.C. circuit concepts; diode and transistor characteristics and applications; amplifiers; feedback circuits; oscillators; operational amplifiers and their applications; logic elements and digital circuits. This course assumes a prior knowledge of basic D.C. circuit concepts, including node and loop methods and transient circuits, but begins with a brief review of these topics. Individualized laboratory stations are utilized to emphasize basic concepts. Students take either 206 or 208. Prerequisites: Physics 126, 186, and Mathematics 261. *Staff.*

208 Introduction to Circuit Analysis. S. An introduction to basic circuit analysis techniques and theorems. Matrix methods of circuit analysis. Introduction to circuits with one or two energy storage elements. Steady state sinusoidal responses using phasors. Computer analysis is utilized. Students may take 206 or 208. Prerequisites: Physics 126, 186, and concurrent registration in Mathematics 231. *Staff.*

Prerequisite to all courses numbered 300 or higher is formal admission to the department.

305 Mechanics of Materials. F. Application of principles of mechanics to the solution of problems in stress and strain of engineering materials, including resistance to force, bending, torque, shear, eccentric load, deflection of beams, buckling of columns, compounding of simple stresses, introduction to theory of failure and energy methods. Laboratory experiments are used to emphasize principles. Prerequisite: 202. *Mr. M. Vander Wal.*

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. Dimensional analysis and laboratory experiments utilized to determine significant flow parameters. Computer analysis is utilized. 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, entropy, thermodynamic relations, mixtures, and an introduction to statistical thermodynamics. Prerequisites: Mathematics 231 and Physics 126 and 186. *Mr. L. Van Poolen.*

311 Electronic Materials and Devices. F. This course deals with semiconductor physics with applications to electronic devices. Topics include: carrier densities, drift and diffusion, conduction theory, contact potentials, photoluminescence, etc. The course centers on the theory of P-N junctions, BJT's, JFET's, and MOSFET's. Fabrication of devices, bias conditions, and DC characteristics are examined. Prerequisite: 208. *Mr. C. Prince.*

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. Prerequisite: Mathematics 231 or permission of the instructor. Not offered 1983-84.

314 Vibration Analysis. S. Analysis of mechanical vibration in both transient and steady state regimes, employing analytical and computer techniques for solution. Linear and non-linear problems are investigated with original inquiry suggested and encouraged. Prerequisites: Mathematics 231 and Physics 126 and 186. *Mr. J. Bosscher.*

316 Heat Transfer. S. An introduction to the analysis of steady and unsteady conduction, of free and forced convection, and of radiation modes of heat transfer. Laboratory experiments are used to emphasize principles. Computer analysis is utilized. Prerequisites: Mathematics 231 and Physics 126. *Mr. J. Bandstra.*

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 investigat-

ed and employed. Prerequisites: Mathematics 231. *Staff*.

320 Hydraulic Engineering. S. Application of the basic principles of fluid mechanics to practical problems in hydraulic analysis and design. Topics include steady open channel flow, flow measurement, turbomachinery, closed conduit flow, pipe networks, unsteady flow, hydraulic structures, and groundwater flow. Computer techniques are frequently used. Prerequisite: 309. *Mr. M. Vander Wal*.

322 Linear Network Analysis. S. A study of s-domain electrical network analysis—steady state and transient responses. Frequency response is determined using transfer functions, Bode plots, and pole/zero plots. Several two-port parameter representations are examined. Operational amplifiers, principles, and applications are studied. Prerequisites: 206 or 208 and Mathematics 333. *Staff*.

324 Materials and Processes in Manufacturing. S. Application of scientific and engineering principles to fabricating processes such as casting, welding, forming, machining, and computer-aided manufacturing (CAM) so as to determine the relation of process to material properties, economics, dimensional accuracy, and energy requirements. Prerequisites: 205, 305. *Mr. J. Bosscher*.

326 Structural Analysis. S. A study of beams, two-dimensional trusses, and rigid frames. Course work includes calculation of shear forces and bending moments due to fixed and moving loads, calculation of deflection, analysis of moving loads using influence lines, and the analysis of statically indeterminate structures. The course also includes an introduction to matrix methods in structural analysis. Prerequisite: 305. *Mr. M. Vander Wal*.

385 Microprocessor Fundamentals and Applications. F. An introduction to basic

computer components, computer architecture, memory structure, and interfacing. Common I/O formats, interrupt procedures, and data conversion techniques are considered. Machine language and assembly language programming are learned on 6502-based microprocessors. Lab work and course examples emphasize control applications, microprocessor data acquisition, and microprocessor system design. Prerequisite: 206 or 208 and CPSC 141. *Mr. C. Prince*.

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

The following titles are illustrative of the proposed fourth-year courses. Such courses will be offered starting with the 1984–85 academic year. Although they were approved in concept as part of the engineering program, each course needs faculty approval before being offered.

Structural Design
Soil Mechanics and Foundation Design
Energy Conversion Devices
Digital Circuit Design
Electronic Circuit Analysis and Design
Advanced Circuit Design
Advanced Thermodynamics
Machine Design
Instrumentation
Senior Design Project

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W51 Engineering Instrumentation. An introductory study of engineering measurement and instrumentation with an emphasis on the characteristics and uses of transducers to measure pressure, acceleration, temperature, strain, voltage, and other physical quantities. Students will also consider the usefulness, accuracy, and reliability of physical measurements. Open only to students not participating in the four-year degree program at Calvin. Prerequisite: 206 or 208. *Staff*.

English

Professors H. Baron, †E. Ericson, G. Harper, I. Kroese, K. Kuiper (chairman), P. Oppewall, C. Otten, H. Ten Harmsel, **J. H. Timmerman, S. Van Der Weele, C. Walhout, M. A. Walters, S. Wiersma

Associate Professors J. Cox, P. Hesselink, J. Vanden Bosch
Assistant Professor 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, 326, 336, 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 Mr. Henry Baron (elementary) and Mr. Kenneth Kuiper and Mr. William 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.

An interdisciplinary supplementary concentration in journalism requires Communication 230, English 260, English 360 (or 332); in addition, the student must choose three courses from English 332, Art 350, Art 351, an internship, and from such interim courses as Technical Aspects of the Media, Legal and Ethical Aspects of the Media, Television and Behavior, and Mass Media and American Politics. The adviser for this program is Mr. Steve J. Van Der Weele.

The core requirement in written rhetoric is met by 100 or by examination. The first literature core requirement is typically 200, 202, 203, 212, 220, or 240, but any course in literature (as distinguished from language, composition, and film) except 325 and 326 may fulfill this requirement. Any literature course 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 em-

phasis 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. *Mr. J. Cox, Mr. J. Vanden Bosch*.

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

220 **World Literature.*** F and S. A course of selected readings and lectures in the literature of 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. J. Vanden Bosch, Mr. S. Van Der 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. *Mr. W. Vande Kopple*.

240 **Modern Canadian Literature.** F. A study of selected works, principally twentieth-century fiction from English Canada, with some attention to major poets and French Canadian writers in translation. Emphasis is placed on the social and historical context of Canadian literature. *Mr. H. Baron*.

251 **Introduction to Cinema.** S. A study of the development and structure of cinema as an art form and as a cultural medium. The course aims to develop the student's understanding of cinematic language and to guide him in assessing films and film values. Course work includes readings in film history and criticism as well as the viewing and analysis of movies. *Mr. I. Kroese*.

260 **Basic 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. *Mr. T. Ozinga*.

295 **Studies in Literature: The History of American Drama.** S. Students this year will

explore the growth and development of American drama from colonial and frontier origins to the present. *Miss M. A. Walters*.

302 **Medieval English Literature.** F. A study of Chaucer's *Canterbury Tales* and other selections from his work which reflect his literary genius and the major cultural phenomena of his time. Supplementary study of other works and literary movements related to the period. *Mr. J. H. Timmerman*.

303 **Shakespeare.*** F and S. A study of the major works of William Shakespeare. *Mr. J. Cox, Mrs. C. Otten, Mr. S. Van Der Weele*.

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. Not offered 1983-84.

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. *Mrs. C. Otten*.

306 **Milton.*** S. An intensive study of the poetry and prose of John Milton. *Mr. J. Cox*.

307 **English Literature of the Eighteenth Century.*** S. A study of English poetry and prose in the eighteenth century, with emphasis on the neo-classicists—Pope, Addison, Swift, and Johnson—and a study of the beginnings of the romantic outlook in Gray, Thomson, and Cowper. Not offered 1983-84.

308 **English Literature of the Early Nineteenth Century.*** F. A study of the Romantic writers of England in both poetry and prose with intensive critical work on Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats. *Mr. I. Kroese*.

309 **English Literature of the Middle and Later Nineteenth Century.*** S. A continuation of 308. A study of the Victorian writers of England in both poetry and prose, with intensive critical work on Tennyson, Browning, and Arnold among the poets, and Arnold, Newman, Huxley, and Ruskin among the prose writers. *Mr. G. Harper*.

310 **American Literature I.*** F. A study of important writings in the colonial and revolutionary periods with emphasis upon the culture and writings of the New England group. *Mr. K. Kuiper, Mr. C. Walhout*.

311 **American Literature II.*** 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. *Mr. K. Kuiper, Mr. C. Walhout.*

313 **Modern English and American Poetry.*** S. A study of the lyric and dramatic poetry of England and America from 1890 to the present. *Mr. C. Walhout.*

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

315 **Modern British and American Fiction.*** F. Intensive reading of selected works of major twentieth-century British and American novelists. *Mr. P. Oppewall.*

319 **Literature since 1945.** S. A study of the fiction and poetry of America and England since World War II. Not offered 1983-84.

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.*

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. Not offered 1983-84.

329 **Linguistics.*** F. A study of some of the more interesting and important characteristics of language, with particular attention given to the assumptions informing the nomenclature, methodology, and scope of traditional, structural, transformational, generative-semantic, and text grammars. The course incidentally considers the relationship of these grammars to the study of reading, composition, and literature. *Mr. W. Vande Kopple.*

330 **History of the English Language.*** S. An analysis of the changes that have occurred throughout the history of the English language, based on an intensive study of selected portions of the *Oxford English Dictionary* and passages from Chaucer, Shakespeare, and various English translations of the Bible. *Mr. 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. Not offered 1983-84.

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.*** F. 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. *Mr. J. H. Timmerman.*

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.*** Not offered 1983-84.

GRADUATE COURSES

510 **Literature for the Adolescent.** A survey and evaluation of adolescent literature, an examination of reference tools and ap-

proaches to the teaching of adolescent literature, a consideration of criteria for selection, and a critical study of several representative works. *Mr. H. Baron.*

511 Studies in Analytical Approaches to the Teaching of Literature. An examination of the theoretical considerations underlying various approaches to teaching literature at the secondary level and application of critical approaches to selected literary works. The specific subject matter will be defined each time the course is offered. *Staff.*

526 Recent Literature for Children. A survey and evaluation of children's literature, with emphasis on the more recent literature; consideration of criteria for selecting children's literature; examination of reference tools, recent trends, issues, and approaches to the teaching of children's literature; and critical study of several representative works. *Staff.*

531 Language and the Elementary Classroom. A study of some aspects of traditional grammar and an introduction to the history of English and current linguistic theory and concerns. Special emphasis is placed on the implications of this knowledge for classroom teaching. *Staff.*

537 Teaching of Writing in Elementary and Middle Schools. F. 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. *Mrs. S. Haan.*

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. F. 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. *Miss D. Westra.*

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 1984 INTERIM

W10 Interim Abroad: English. Students will do creative writing at the University of Wales, Aberystwyth, under the direction of an Anglo-Welsh poet, novelist, and television scriptwriter, and will study the poetry of Gerard Hopkins and Dylan Thomas in tutorials, seminars, lectures, and visits to sites associated with Hopkins (St. Beuno's College and the Vale of Clwyd) and Thomas (Laugharne, Llanstephan, Fern Hill, Carmarthen, Swansea). In addition, they will hear lectures on Welsh culture, listen to poetry readings by Anglo-Welsh poets, and attend theater productions and recitals. Each student will prepare a manuscript under the joint tutorship of American and Welsh instructors. Fee of approximately \$1,500. Prerequisite: permission of the instructor. Off-campus. *Mrs. C. Otten.*

W13 Shakespeare's Greatest Hits. A study of seven of Shakespeare's most popular plays—comedies, tragedies, and histories—as they appear both on the page and on the screen. Some consideration is given to stage production and to the adaptation of play to film. The purpose of the course is the understanding and the enjoyment of Shakespeare in performance as well as in reading. Students may not apply both this course and English 303 to graduation requirements. *Mr. I. Kroese, Miss M. A. Walters.*

W14 F. Scott Fitzgerald and the Twenties. An intensive study of F. Scott Fitzgerald's major writings and the fascinating era which they reflect. Students read the best of Fitzgerald's novels and stories, a brief cultural history of the Twenties, a biography, and perhaps Zelda Fitzgerald's novel *Save Me the Waltz*. This course has been designed to challenge the student who is widely read in literature and to please the student who is timorous but curious about literature. The course includes lectures, discussions, films, and quizzes. A reading list will be available in the office of the English Department during December. *Mr. K. Kuiper.*

W15 The Poe Principle: The Life, Times, and Writings of Edgar Allan Poe. Poe is much more than a writer of mysteries and shockers, though he is pretty good at that, too. He has a philosophy of life and art, of

tragedy and triumph, that is worth close examination; and he presents an interesting case for how a writer's ideas about life shape his literary style and practice. The course takes Poe's life and works in chronological sequence in order to highlight his development as a writer and thinker. Papers and an examination. *Mr. C. Walkout.*

W19 Versions of the Past: Twentieth Century Plays on Historical Subjects. Through the study of selected modern plays, students will gain the skills needed to enjoy and understand a play as a literary form and consider how literary works interpret human experience and thus reflect worldviews. Plays studied include: Shaw, *Saint Joan*; Anouilh, *The Lark*; Osborne, *Luther*; Miller, *The Crucible*; Eliot, *Murder in the Cathedral*; Camus, *Caligula*; Hochhuth, *The Deputy*; and Weiss, *Marat/Sade*. Daily reading assignments, regular quizzes, lectures, discussions, films, and an individual report on specified historical or biographical background reading. A reading list will be available in the English Department office before Christmas. *Mr. P. Hesselink.*

W50 The Fiction of John Steinbeck. The American Nobel prize-winner John Steinbeck has been acclaimed for his ability to capture graphic portraits of American life in his literature. This course explores his major novels in the context of American social, political, and religious thought of the 1930's and 40's. Works include the comedy, *Sweet Thursday*; the social protest novels, *Grapes of Wrath*, *In Dubious Battle*, and *Of Mice and Men*; the novellas, *The Red Pony* and *The Pearl*; and selected short stories. Several films based on Steinbeck's work will be shown. All novels should be read before the course begins in order to facilitate seminar presentations and discussion. The reading list will be available before Christmas. Testing and research. Prerequisite: at least one English course at the 200 level or higher. *Mr. J. H. Timmerman.*

W51 Writing About the Arts. This course offers experience in writing reviews of films, plays, lectures, books, and television programs for various types of media. Assignments can be arranged for students with special interests in music and art. Readings in critical writing are included. This course is one of the writing options open to students in the journalism program. The student's schedule should permit attendance at some off-campus events. Prerequisite: 100;

260 or Communication 230 is desirable. *Mr. S. Van Der Weele.*

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 her life and her work. They pursue answers to these 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, readings, filmstrips, and film of Julie Harris' performance in "The Belle of Amherst." Prerequisite: 100. *Mr. P. Oppewall.*

W53 Children's Literature: The Illustrated Book. This course focuses on illustrated children's 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-Shephard, Carroll-Tenniel, McCloskey, Keats, Sendak, McDermott, White-Williams, and Jarrell-Burkert. Lectures, films, discussions, reports, book evaluations, and journal reviews. Possibly a guest author or illustrator. Not open to students who have taken or plan to take English 325. Prerequisites: 100 and, ideally, a literature course. *Mrs. P. Tigchelaar.*

W54 Flannery O'Connor: Christ and the Comic, Grace and the Grotesque, Mystery and Manners. A study of the sprightly, invigorating stories and novels of Flannery O'Connor, one of America's great Christian writers of this century. Besides reading all of her significant fiction, students will read *Mystery and Manners* and *The Habit of Being*,

the two manifestations of her aesthetic theory and her Christianity which help most to illumine her own fiction. Lecture, discussions, films, and short papers will occupy the students as they discover the mystical in the macabre and the verities in the violence of Flannery O'Connor's fiction. Prerequisite: 100. *Miss H. Ten Harmsel.*

W55 The Comic Truth of Christopher Fry. An analysis and evaluation of the ten plays of Christopher Fry as dramatic art. An evaluation of Fry's theory of comedy, of his perception of the Gospel, and of his philosophy of life. Students will read the ten plays and some of the important critical pieces that interpret them. Included among these will be the instructor's *More Than the Ear Discovers*, a new analysis of each play. Time otherwise spent in lectures can be spent in discussing the book, which students will read concomitantly with the plays. Two papers are required. Prerequisites: 100 and a literature course. *Mr. S. Wiersma.*

W56 Lewis and Tolkien: Fantasy and Theory. The literary fantasy of C. S. Lewis and J. R. R. Tolkien has been enormously popular in the second half of the twentieth century, despite both writers' adherence to a theology and literary theory which are extremely archaic. This course explores the *Chronicles of Narnia*, *The Lord of the Rings*, and *The Silmarillion* as examples of these writers and their tradition at its best. The aim is to understand the tradition through these examples. Class discussions, two brief papers, and a final examination. Reading requirements are heavy; so some reading should be done before the interim begins. A reading list will

be available in the English Department office before Christmas. Prerequisite: 100 or permission of the instructor. *Mr. J. Cox.*

W57 Grammar for Teachers and Others. Prospective elementary and secondary teachers will learn about grammar and how it can be taught. They will review traditional grammar and, in the process, develop an understanding of how it fits together as a system. Special attention is given to the usefulness of an understanding of grammar for the teaching of writing. This course is especially useful for students who have not studied grammar in college and would like to have the opportunity before graduation. Daily assignments, reports, projects, lectures, and discussions. Prerequisite: 100. *Mr. J. Vanden Bosch.*

W58 Three Victorian Poets and Their Struggles with Christianity. An examination of selected poetry by and biographical materials about Matthew Arnold, Arthur Hugh Clough, and Alfred Tennyson. The main focus is on the effect that their struggles with Christianity had on their art and its products. The student will incidentally examine his own faith, using the heuristic models available in this selection of poets. Reading lists available in December. Possible field trip; research paper is required. Prerequisite: 200 and permission of the instructor. *Mr. G. Harper.*

IDIS W11 Introduction to Frisian, H. Baron.

IDIS W18 From "Da-Da" to Discourses: The Acquisition and Development of Language. *Mr. W. Vande Kopple.*

Environmental studies

SEE THE DEPARTMENT OF GEOLOGY, GEOGRAPHY, AND ENVIRONMENTAL STUDIES for a description of courses and programs of study in environmental studies.

French

Professor A. Otten

Associate Professors C.-M. Baldwin, B. Carvill (chairman)

Assistant Professors †E. Monsma, 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. *Staff.*

102 **Elementary French.** S. Continuation of 101. Prerequisite to a program of concentration are 101 and 102. *Mrs. C. M. Baldwin.*

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

202 **Intermediate French.** S. Continuation of French 201. *Mr. A. Otten.*

215 **Advanced French.** F. Exercises, compositions, and drills designed to develop in the student advanced competence in oral and written French. Prerequisite: 123 or 202 or the equivalent. *Mrs. C. Gallouët-Schutter.*

216 **Advanced French.** S. Continuation of 215. *Mr. A. Otten.*

315 **Special Studies in French.** F, half course. This course is for the advanced student who wishes to improve fluency in and knowledge of the language, to prepare for the teaching of French, or for graduate study. Both practical and theoretical study of selected areas of the French language, such as advanced grammar, phonetics, linguistics, *la stylistique, la dissertation.* Prerequisite: 216 or permission of the instructor. *Mr. A. Otten.*

316 **Special Studies in French.** S, half course. Continuation of 315. *Mrs. C.-M. Baldwin.*

LITERATURE

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

217 Introduction to French Literature. F. An introduction to the major writers, 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. Mrs. C.-M. Baldwin.

311 French Drama.* S. A study of dramatic literature from the Middle Ages to the present day, with emphasis on classical and contemporary drama. Conducted in French. Not offered 1983-84.

312 The French Novel.* F. A study of fiction from the Middle Ages to the present day with special emphasis on the nineteenth and twentieth centuries. Conducted in French. Mrs. C.-M. Baldwin.

313 French Poetry.* F. 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. Not offered 1983-84.

314 French Prose.* S. A study of major writers expressing French thought, spirit, and sensibility in nonfiction from Calvin to the present. Special attention is paid to the tradition of the *moralistes*. Conducted in French. Mrs. C. Gallouët-Schutter.

371 Literary Doctrines and Problems.* S. An advanced course devoted largely to literary theory, using as its point of departure a selection of such significant documents in the history of French literature as Du Bellay's *Défense et illustration de la langue française*, the various statements relating to the *Querelle des anciens et des modernes*, Hugo's *Préface de Cromwell*, the transcript of Flaubert's trial, and others. This course includes an examination of the situations and writings which elicited these documents. Normally this course should be taken after

completion of the genre courses. Conducted in French. Not offered 1983-84.

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

395 Seminar.*

CIVILIZATION

272 Introduction to French Culture and Civilization. An introduction to the cultural traditions of France and to the way these are reflected in its social, political, and religious institutions and in its literature, art, and music. The course is taught in English; no knowledge of French is required. Satisfies the foreign culture option for students in designated programs. Not offered 1983-84.

372 French Civilization. F. A study of French history and geography, with emphasis on the major political, social, and artistic movements of the past and present. Designed to enhance the student's knowledge of French culture and to enrich his literary studies, this course is a complement to, rather than a substitute for, literary studies. Conducted in French. Not offered 1983-84.

JANUARY 1984 INTERIM

W50 Québec Live! Interim in "La Belle Province". During a two and one-half week stay in Jonquière, students will attend forty-two hours of class in small groups taught by native instructors. By living with local families who will provide lodging and meals, and by enjoying sports and cultural activities, students will have an opportunity to experience Québec culture. Five days will be spent in Québec City as guests of a francophone congregation, sharing in the lives and vision of Reformed Christians in Québec; sight-seeing and participation in cultural activities of the city. Fee of approximately \$875 (U.S. currency). Prerequisites: 123 or 202 and permission of the instructor. Mrs. C.-M. Baldwin.

W51 La Chanson Française. Using recordings, texts, and historical and critical documents, students will examine (and sing) a

variety of songs from France and French Canada, both as manifestations of a culture and as a commentary on it. Songs are chosen from the folk, religious, Christmas, popular, and cabaret/music hall traditions, some of which have their origins in the Middle Ages. Recent *chanteurs* to be studied include Edith Piaf, Jacques Brel, and Georges Brassens. Some songs will be suitable for use in the elementary and secondary French

classroom. Each student will make a presentation on a particular period, theme, or artist. Prerequisite: 201. *Mr. A. Otten.*

122 Intermediate French. From the sequence 121–122–123 which covers the requirements for language. French 122 should correspond to a whole semester of language. Prerequisite: 121 or its equivalent. *Mrs. C. Gallouët-Schutter.*

Geology, geography, environmental studies

Professors C. Menninga (chairman), D. Young
Associate Professor H. Aay
Assistant Professor J. Clark

PROGRAMS IN THE DEPARTMENT include major and minor concentrations in geology, a supplementary concentration in environmental studies, some courses in geography, as well as majors and minors for teacher education programs.

Programs in geology. The major program of concentration in geology consists of 151 or 105, 152, 201, 202, 212, and four additional courses approved by the adviser. Field camp is recommended. Required cognate is Chemistry 103. Recommended cognates include Chemistry 104, Physics 123, 124, 181, 182, and Mathematics 161 and 162.

The recommended program for students who wish to pursue a career or graduate study in geology consists of 151 or 105, 152, 201, 202, 212, 301, 302, 311, an approved elective, either 395 or 396, and field camp, with cognates including Chemistry 103 and 104, Physics 123, 124, 181, 182, and Mathematics 161 and 162.

Students must have completed at least three courses in geology with a minimum average grade of C (2.0) before they may be formally admitted to the major program in geology.

The minor concentration in geology consists of 151 or 105, 152, 201, 212, and two additional courses approved by the adviser.

Group majors consisting of geology and chemistry, engineering, or physics are also available.

Programs in geography. Presently, courses in geography are offered as electives for students who wish to broaden their social science knowledge through the study of human ecology and locational analysis. A minor concentration in geogra-

phy requires Geography 101, 210, 220, Geology 100, and Environmental Studies 201, plus an additional course approved by the adviser.

Programs in environmental studies. Courses in environmental studies are offered to those students interested in studying a broad range of environmental problems and issues at the local, national, and global levels. Because the study of such issues is truly interdisciplinary in scope, environmental studies courses are suitable for students from the humanities, the social sciences, and the natural sciences. They may be taken singly as electives to enrich a program of study or as a supplementary concentration to a major. The supplementary concentration consists of three required courses, Environmental Studies 201, 202, and 395; two courses chosen with the approval of the program adviser from among: Biology 216 or 222, 240S, 351, Chemistry 110, Environmental Studies 385, Economics 232, Geography 101, 201, Geology 100 or 103 or 105, 311, Sociology 308, or approved interim courses; and one additional elective approved by the adviser.

Teacher education programs. Prospective secondary teachers wishing to teach subjects taught in this department should consult the chairman.

Prospective elementary teachers may choose concentrations including courses in geology, geography, and environmental studies. Social studies group majors require Geography 101 or a three-course sequence involving Geology 100 or 103, Geography 210, and 220.

The teacher education adviser is Mr. Clarence Menninga.

General regulations. The core requirement in the physical sciences may be met by Geology 103. The core requirement in the natural sciences may be met by Geology 151–152 or 105–152.

A group major in science and mathematics meets the needs of some students, particularly those in professional programs. Such group majors require twelve courses in the sciences and mathematics, ten of which must be from two departments with no fewer than four from either, with the remaining two courses chosen from a third department. The chairmen of the three departments involved must approve such programs.

ENVIRONMENTAL STUDIES

201 Human Activities and Natural Environments.* F. An examination of the complex system of relationships between human activities and natural environments. The ecology of natural systems will be studied by examining the relationships among their dynamic components. Upon this framework, activities by which societies—past and present—have used, affected, and transformed their natural settings are examined. Not open to freshmen. *Mr. H. Aay.*

202 Environment and Society: Issues and Policies.* S. The interactions among population, resources, technology, economics, and public policy are studied in order to understand and address the environmental issues and problems of our day. Attention is focused upon energy, material, and food resource issues as well as upon population and resource relationships. Political, economic, and technological policies plus individual lifestyles are considered as part of responsible earthkeeping. Not open to freshmen. *Mr. H. Aay.*

385 Internship in Environmental Studies.* F or S. This course is an internship

involving field application of the concepts and principles learned as part of the environmental studies supplementary concentration. A student is placed in a position in a governmental agency, a not-for-profit organization, or a corporate firm which builds on previous instruction in the student's program of concentration in an area related to environmental matters. Students are assigned a specific project and work under the direct supervision of an employee of the governmental, non-profit, or business entity, as well as under the supervision of the instructor. Prerequisites: Environmental Studies 201, 202, and permission of the instructor. *Mr. H. Aay.*

395 Seminar in Environmental Studies.*

This course aims to develop a Christian philosophy of the environment and environmental management. Problems, controversies, developments, issues, and research in environmental affairs are examined. These topics are studied through readings, student reports, and guest lecturers. Prerequisites: Environmental Studies 201 and 202 or permission of the instructor. *Mr. H. Aay.*

GEOGRAPHY

101 Introduction to Geography. F and S. A systematic overview of geography as a field of study: major paradigms, subfields, theories, theorists, concepts, techniques, and viewpoints. The course seeks to develop a geographic perspective on world and life. Principal topics for study include the physical earth, human ecology, and the spatial organization of society. *Mr. H. Aay.*

210 Introduction to Cultural Geography.

F. An examination of the interactions between culture and nature in pre-agricultural, agricultural, and urban-industrial societies. The course explores the origins, character, content, organization, perceptions, and meanings of cultural landscapes, past and present, large and small. Prerequisite: 101. Not offered 1983-84.

220 Urban Geography. F. A study of the spatial organization of cities and systems of cities. Both the internal structure and external relations of cities receive attention. The historic and present-day spatial organization of infrastructure, economic life, social activities, ethnicity, institutions, and politics are examined. Prerequisite: 101 or one social science course. *Mr. H. Aay.*

GEOLOGY

100 Earth Science. F. An introductory study of four aspects of the earth: earth as a planet in the solar system; the structure and composition of earth's crust and interior; earth's atmosphere and weather processes; and the oceans. Laboratory. *Mr. C. Menninga.*

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 through firsthand observation of such features as the Cascade Range volcanoes, the Pacific Ocean coast, the Klamath Mountains, and the rivers and lakes of southern Oregon. Students live for about three weeks at a base camp located east of Ashland, Oregon, near the crest of the Cascades. Not open to students who have taken 103 or 151. Prerequisite: permission of instructor. *Mr. D. Young.*

151 Introductory Geology. F. A study of the geological structure of the earth. Topics included are: minerals and rocks; formation and alteration of rocks in the earth's crust; earth's interior and surface structure; processes producing geological changes; and the earth as a representative planetary body in space. Laboratory. *Mr. J. Clark.*

152 Historical Geology. S, core. A study of geological structures that have existed in the past and of the changes and development that have taken place in the earth's crust. Evidences for these past structures and events are taken from present rock strata, including the fossil record. Laboratory. Prerequisite: 105, 151, or 103 and permission of instructor. *Mr. C. Menninga.*

201 Mineralogy.* F. A study of the principles of crystal structure in minerals with emphasis on the silicates. Modes of geologic occurrence of minerals are reviewed. Crystal morphology and mineral identification are emphasized in laboratory. Laboratory. Prerequisites: 105 or 151 and Chemistry 103. Mr. D. Young.

202 Optical Mineralogy.* S, half course. This course treats the theory of polarized light transmission in minerals, the use of the polarizing microscope in the identification of minerals and determination of their optical properties, and the use of the universal stage. Laboratory. Prerequisite: 201. Mr. D. Young.

212 Structural Geology.* S. An analysis of common geological structures such as folds, faults, joints, and foliations; inquiry into the means by which these structures are formed from stresses within the earth; methods of constructing and interpreting geological maps and cross sections; introduction to field mapping techniques. Laboratory, field trip. Prerequisite: completion of or concurrent registration in 152. Mr. J. Clark.

301 Igneous and Metamorphic Petrology.* F. An investigation of the mineralogy, chemistry, structure, texture, field associations, tectonic setting, and genesis of igneous and metamorphic rocks. The petrographic microscope is used extensively in the description and genetic interpretation of rocks. Laboratory. Prerequisite: 202. Mr. D. Young.

302 Sedimentology.* S. The study of sedimentary rocks. This course includes theories of depositional processes, lithification and diagenesis of sediments; classification of sedimentary rocks; comparisons of structures in modern deposits to those found in ancient rocks; and applications to fossil fuel industries. Laboratory, field trips. Prerequisite: 202. Mr. J. Clark.

304 Geochemistry.* S. The origins and history of the solar system, earth, crust and mantle, and various rock types in light of the distribution of the chemical elements and of stable and radioactive isotopes. Prerequisites: 201 or Chemistry 104 plus Geology 105 or 151, or permission of the instructor. Not offered 1983-84.

311 Geomorphology.* F. The investigation of landforms and the processes which cause them. This course studies the erosio-

nal 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.

314 Stratigraphy.* S. The fundamental principles of the classification and interpretation of rock strata are illustrated through intensive study of classic stratigraphic successions in the central Appalachian, the Colorado Plateau, Wyoming, and the British Isles. Laboratory, field trips. Prerequisite: 152. Mr. D. Young.

321 Glacial Geology, Quaternary Stratigraphy, and Climatic Change.* S. Study of the effects of ice sheets and colder climates of past ice ages upon the earth's surface. In this course glaciology (accumulation and flow of glaciers) and glacial geology (landforms due to glaciation) are studied, emphasizing the glacial stratigraphy of Michigan. An overview of deposits of Quaternary age throughout the world gives additional evidence for and understanding of previous ice ages. Theories of climatic change, as well as man's effect upon and response to climatic change, are also discussed. Field trips. Prerequisite: 311. Mr. J. Clark.

331 Geophysics. F. An overview of physical methods used for determining properties of the earth's interior (solid earth geophysics) and for discovering economically important resources in the earth's crust (exploration geophysics). Topics in solid earth geophysics: heat flow and the earth's temperature distribution; gravity and the density profile and shape of the earth; magnetism of the earth and paleomagnetism; anelastic properties and viscosity of the earth; and earthquake prediction. Topics in exploration geophysics: reflection and refraction seismology, gravimetry, resistivity, and well-logging techniques. Laboratory. Prerequisites: 151, Physics 124 or 126, Mathematics 162, or consent of the instructor. Mr. J. Clark.

390 Independent Study.* F,I,S, full or half course. Prerequisite: permission of department. Staff.

395-396 Research in Geology.* F, I, S, full or half course. Field and/or laboratory research on an approved geological problem

and presentation of the results of the research in seminar. Open to qualified students by permission of the geology staff. *Staff.*

GRADUATE COURSES

520 **Advanced Earth Science.** This course includes consideration of the main ideas which serve as unifying principles in Earth science. Recent discoveries and current research projects are reviewed. The course highlights ideas resulting from studies in earth sciences which have increased our understanding of the relationship between the earth and its human inhabitants. Topics include applications of geology to environmental problems, contributions of space research to understanding the earth, and the relationship between the results of geological study and teachings of the Bible. Special attention is given to topics and concepts which can be incorporated into elementary, middle, and secondary school materials and activities. Prerequisite: Geology 100 or permission of department. *Staff.*

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

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

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

JANUARY 1984 INTERIM

W50 **Geology of National Parks.** This course acquaints the student with the geologic history and geologic structures displayed in several representative National Parks of the United States and Canada. Lectures, films, slide-illustrated talks. A four-day field trip to Mammoth Cave National Park, Kentucky, is an integral part of the course. A paper and two examinations are required. Fee of approximately \$75. Prerequisite: one geology course or permission of the instructor. *Mr. J. Clark.*

W51 **Perspectives on Geology.** The historical development of geological thinking from ancient Greece to the present is reviewed. Christian contributions to knowledge of the Earth are discussed. The course deals with the fundamental principles of geological theorizing and seeks to develop a consistently Christian philosophy of the Earth. The course includes readings in primary sources, a term paper, and final examination. Prerequisite: permission of the instructor. *Mr. D. Young.*

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 102, 122, or the equivalent.

The typical major requires ten courses in addition to the elementary courses and must include 123, 202, or the equivalent, 215, and at least two courses at the 300-level. Six-course minors must include 215. The nine-course teacher education major must include 215, 216, 250, and two 300-level courses. Students in this program must pass a German grammar test prior to the teaching internship, which is offered only during the spring semester. The teacher education adviser is Mrs. B. Carvill.

Calvin-sponsored programs are available in Germany and Austria for the interim, a semester, or an academic year. Students interested in such programs should work out the details with the chairman and the registrar.

The fine arts core may be met by German literature courses numbered 217 and above.

LANGUAGE

101 **Elementary German.** F. A beginner's course stressing both written and spoken German and including an introduction to German culture. *Staff.*

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

121-122-123 **Introductory and Intermediate German.** F, I, S. A closely integrated sequence involving two semesters and the interim for students who have completed two years of high school German but who, on the basis of a placement test, are not prepared for 201. The course is also open with the permission of the department to students in teacher education programs who have had no foreign language in high school. *Staff.*

201 **Intermediate German.** F, core. 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, and drills designed to develop in the student intermediate competence in speaking and writing idiomatic German. Prerequisite: 123 or 202. *Mr. J. Lamse.*

216 **Advanced Oral and Written Composition.** S. Continuation of 215. *Mrs. B. Carvill.*

LITERATURE

217 **Readings in Major German Authors.** S, core. Basic introduction to German literature. Selected readings in major German authors from 1750 to 1850. Prerequisite: 123 or 202. *Staff.*

218 **Readings in Major German Authors.** F and S, core. Readings in major German authors from 1850 to the present. Prerequisite: 123 or 202. *Mr. 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 immediately preceding this era and an analysis of some literary works characteristic of the period. Prerequisite: 217, 218, or permission of the instructor. *Mr. C. Hegewald.*

305 **Nineteenth Century Literature.*** F, 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 Re-

public. 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 programs include the "foreign culture" option. No knowledge of German is required. *Mr. W. Bratt.*

JANUARY 1984 INTERIM

W10 Nazi Germany. A study of Nazi Germany, 1933-1945, concentrating on the origins and growth of Nazism, life in Hitler's Germany, and the last days of the Third Reich. The course is conducted in English. Slides, movies, records, eyewitness reports,

textbooks, demonstrations, presentations of projects, conversations, lectures, and quizzes. *Mr. C. Hegewald.*

W50 German Interim Abroad. This course is approximately five weeks in length and is conducted in West and East Germany. A brief tour through Northern Germany is followed by ten days of study in Husum, Schleswig-Holstein. A second study-phase of the course is conducted in West Berlin, and is followed by a tour of East Germany. Course participants are given approximately a week for independent study and travel prior to returning to the U.S. Lectures and writing assignments. Satisfies departmental concentrations. Fee of approximately \$1,475. Prerequisites: 215 and permission of the instructor. Off-campus. *Mr. W. Bratt.*

W52 Business German. An introduction to the background knowledge and skills needed to enable one to engage in business dealings with individuals and institutions that operate 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 its equivalent. *Mr. J. Lamse.*

122 Intermediate German. From the sequence 121-122-123. 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 permission of the department, to students in teacher education programs who have had no foreign language in high school. *Staff.*

Greek

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

History

*Professors R. Bolt, H. Brinks, 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
Instructor D. Miller

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

The minimum requirements for a major concentration are nine courses in history including 101, 102, or 102 Honors, the departmental seminar (395), and a program emphasizing either American, European, or World History concentrations. One upper-level interim course may be included in the required nine courses. The European concentration requires at least three courses from 301–305, at least one course from 310–312, and at least one additional course from 310–312 or from 355 and 356. The American concentration requires at least three courses from 310, 311, 312, 355, and 356 and at least two courses from 301–305. The World History concentration requires one course from 301–305 (from 301–302 if the student has taken 102), one course from 310–312, and at least four courses from 201, 202, 203, 204, 205, 206, 207, and 320. A 390 in a non-western field is also advised. The world history concentration is designed primarily for teacher education students. Other teacher education programs require two to three courses from both the European and the American sequence with electives from non-western history. A secondary school minor includes 101 or 102; two from 310, 311, 312 (or 211 plus either 355 or 356); 360, and two others. The elementary school minor is 101, or 102, 202, 204, 211, 320, and one other. The ideal teaching minor

should include the designated courses in both programs. One upper-level interim course may be applied to a minor concentration. Students seeking special advice on teacher education programs, including group majors for middle school teaching, should consult Mr. Samuel Greydanus.

The core requirement in history must be met by one course from 101, 102, or 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 with the chairman alternative ways of satisfying the requirement.

AREA SURVEYS

101 **Western Civilization.** F and S, core. A study of the main cultural currents of Western Civilization with primary emphasis on the period from antiquity through the sixteenth century. *Staff.*

101 **Honors Western Civilization.** F, core. Following a rapid survey of Western civilization to A.D. 1527, each student will be required to write four papers. These papers will be on the events of each of the following years: 44 B.C., A.D. 800, 1348, and 1564. One test but no final examination. *Mr. H. Rienstra.*

102 **Western Civilization.** F and S, core. A study of the main cultural currents of Western Civilization with primary emphasis on the period since the Reformation. *Staff.*

201 **Ancient Near East.*** F. A cultural history of the ancient Near East from prehistory to Alexander, based on evidences from archaeology and cultural anthropology as well as on ancient texts in translation, Biblical accounts, and contemporary historical records. Special consideration is given to geographical setting, artistic and linguistic traditions, and cultural contacts with European civilizations. Not offered 1983-84.

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. Not offered 1983-84.

203 **Traditional East Asia.*** S. An introduction to the history of East Asian civilizations from the earliest times to the nine-

teenth 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. Not offered 1983-84.

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

205 **History and Society in West Africa to 1800.** F. A wide-ranging survey of prominent themes encompassing several centuries of West African history. The principal aim is to introduce students to some of the main currents of West African history and to provide insights into its society and culture. Themes include: pre-colonial times; culture, commerce, and state building; the trans-Saharan and Atlantic trade; Islam and the socio-political changes it brought; the Atlantic slave trade. Not offered 1983-84.

206 **History and Society in West Africa since 1800.** S. An examination of the historical, political, and economic development of West Africa since 1800. The course examines European imperialism in the late nineteenth and twentieth centuries, the development of African nationalism, resistance and struggle for independence, neo-colonialism, and the origins of contemporary social, economic, and political problems in the new states of the area. Not offered 1983-84.

207 **Latin America.*** S. A study of continuity and change in Latin America from Pre-Columbian times to the present. Topics

covered include the melting of races and cultures in the Conquest Era, the long-term influence of colonial institutions, the paradox of economic development and continued dependency, the current struggle between forces of the Left and the Right, and the crucial role of the Roman Catholic church. *Mr. D. Miller.*

NATIONAL HISTORIES

211 **Survey of American History.** F and S. Selected themes in American history from colonial times to the present. This course is not intended for those who plan to take period courses in American history. *Mr. R. Bolt, Mr. D. Miller.*

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. Not offered 1983-84.

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. Not offered 1983-84.

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. Not offered 1983-84.

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.*

STUDIES OF HISTORICAL PERIODS

301 **Classical History.*** F and S. A study of the history of Greece and Rome from the Minoan Age through the reign of the Emperor Theodosius. The emphasis is on the political and economic changes which were the background for the shifts in intellectual styles. Particular problems are studied in depth: the emergence of the city-state; the Periclean age of Athens; the age of Alexander; the crisis of the Roman Republic; and the Decline. Classics 311 or 312 may substitute for this course. Not offered 1983-84.

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

303 **Renaissance and Reformation Europe.*** F. Studies in topics in European history from 1300 to 1650. Attention is given to such problems in intellectual history as the nature of humanism, the character of religious reform, and the rise of science. Requires readings in narrative histories and sources. *Mr. H. Rienstra.*

304 **Early Modern Europe.*** S. A history of Europe from 1600 to 1815, from the Thirty Years War through the French Revolution, with considerable emphasis on the Age of Reason and Enlightenment. *Mr. E. Van Kley.*

305 **Modern Europe.*** F and S. The history of Europe from the French Revolution to World War I. Special attention is paid to social and cultural developments, including the rise of industrial society, ideologies and protest movements, nation-building, mass

politics, materialism, and the *fin de siècle* revolution in art and thought. *Mr. D. Diephouse.*

310 Colonial United States.* F and S. A study of the colonial origins of the United States from the first settlements to about 1790, with primary emphasis on the intellectual, social, and religious developments, and on the European origins of American thought. Attention is given to 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, Mr. G. Marsden.*

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

320 Contemporary World.* S. A topical analysis of twentieth century history, stressing Europe's place in a global civilization. Major themes include the growth of collectivism; the impact of mass democracy; the "international civil war"; the emergence of Third World societies; and the character of contemporary art, thought, and popular culture. *Mr. D. Diephouse.*

TOPICAL STUDIES

334 United States Constitutional History.* A study of the development of American legal and political traditions using the constitution as the focal point. Emphasis is on such themes as the interrelationship among the three branches of government and the relationship between legal education and the decisions of the courts. Particular attention is given to the Supreme Court decisions as they have reflected or molded

social, intellectual, economic, and political change. Not offered 1983-84.

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.*

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.* F. 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, 1984. 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 1984 INTERIM

W10 Florence and Geneva: Renaissance and Reformation Cities. It has long been known that urban life was the context of the Renaissance. More recently Reformation historians have discovered the importance of cities. The lectures and readings of this course concentrate on Florence and Geneva as examples of how urban life influenced the intellectual, sociological, and religious dynamics of both the Renaissance and Reformation. Additionally, each student will be

required to write a paper on a given city's history during the fifteenth and sixteenth centuries in Europe. Ideally, students in this course should have completed 101 or 102. *Mr. H. Rienstra.*

W12 History of the Christian Reformed Church. A survey analysis of the Christian Reformed Church. The survey includes consideration of the broader European antecedents, 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, organizations, 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, guest speakers, archival research in the colonial origins collection, and a short paper. Not open to students who completed IDIS W22 in 1983. *Mr. H. Brinks.*

W13 America in the Age of Franklin D. Roosevelt. A study of the United States of the thirties and early forties. This course is concerned not only with the big names of this period such as Franklin Delano Roosevelt and Dwight David Eisenhower, and the major events such as the Great Depression, the New Deal, and the Second World War, but also with the lives and happenings of the average American. Thus, many facets of life in the thirties and forties get some attention—sports, entertainment, occupations, crime, education, religion, etc. The thirties and forties come to life through lectures, readings, discussions, films (such as "Grapes of Wrath"), and the personal experiences of people who lived during this period. Research project and written report required, as well as two exams. *Mr. R. Bolt.*

W14 Tomahawks, Peace Pipes, Wampum: Native American Leaders in War and Peace. A Biographical Study. The student will become acquainted with a select number of important Native American heads of government and leaders in various periods of North American history through the reading of biographies. Such persons could include: Hiawatha, King Philip, Pontiac, Tecumseh, Osceola, Black Hawk, Crazy

Horse, Chief Joseph, Chief Poundmaker, and Black Elk. Class discussion, films, and a research paper. *Mr. S. Greydamus.*

W50 Historians and the Nazi Question. This reading seminar deals with National Socialism as a problem in historical interpretation, emphasizing the ways in which scholars' own religious and ideological perspectives have influenced their understanding of the past. An intensive reading of Pierre Aycoberry's *The Nazi Question* provides the basis for a critical survey of the various methodologies and interpretive constructs, from Marxism to psychohistory, which have been employed to analyze the nature and significance of the Nazi era. Specific issues discussed include Nazi mentality, the reasons for Hitler's rise and fall, the organization of the Nazi state, and the usefulness of such general concepts as fascism and totalitarianism to explain the Nazi

phenomenon. The course involves lectures, student reports, and a brief summary paper, as well as extensive discussion of common readings. Prerequisite: 102 or permission of the instructor. *Mr. D. Diephouse.*

W51 Total War: A History 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 strategy of the inter-war 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. Not open to students who completed IDIS W50 in 1983. Prerequisite: one history course. *Mr. F. Roberts, Mr. J. Dodge.*

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, G. Venema, †P. Zwier

Associate Professors D. Brink, J. Kuipers, †M. Stob

Assistant Professor D. Schierbeek

Instructors G. Adams, D. Van Koevering

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; one from 243, 261, or 361; 251 or 351; 321; and one additional 300-level course.

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

The core requirements in mathematics may be met by 100, 121, 131, or 161.

100 Elements of Modern Mathematics. F and S, core. An introduction to the content, methodology, and history of mathematics. Among the topics which may be covered are cardinal numbers and set theory, axiomatic systems, probability theory, computer programming, groups and fields, and number theory. Prerequisites: a year of high school algebra and geometry. *Staff.*

110 Elementary Functions. F. A course in elementary functions to prepare students for the calculus sequence. Topics include the properties of the real number system, inequalities and absolute values, functions and their graphs, solutions of equations, polynomial functions, trigonometric functions, exponential and logarithm functions. Prerequisite: two years of high school mathematics. *Staff.*

121 Fundamental Concepts in Mathematics: The Real Number System. F and S, core. This course gives the prospective elementary teacher an exposure to elementary mathematics from a more advanced standpoint. It considers the methodology of

mathematics as well as the historical development of the real number system. Other topics considered are logic, sets, axiomatic systems, groups, and number theory. Students may not receive credit for this course and for 100. Prerequisites: a year of algebra and of geometry in high school. *Mr. P. Boonstra.*

131 Finite Mathematics, Probability, and Statistics. F and S, core. Topics include a review of algebra, matrix theory, systems of linear equations, linear programming, elementary probability theory, decision theory, descriptive statistics, regression analysis, and statistical inference. The student is introduced to the use of the computer in statistical computations by means of the MINITAB statistical package. Intended for students other than mathematics and science majors. Prerequisite: two years of high school mathematics. *Staff.*

132 Calculus for Management, Life, and Social Sciences. Functions, limits, derivatives. Applications of derivatives to maximum-minimum problems. Exponential

and logarithm functions. Integrals. Functions of several variables. The course includes a short module on computer programming using BASIC and use will be made of programming at appropriate points in the course. Not open to those who have completed 161. Prerequisite: 131 or permission of instructor. *Staff*.

143 Elementary Statistics. S. An introduction to the concepts and techniques of statistics, designed for students with limited mathematical background. Topics include descriptive statistics, elementary probability theory, random variables and probability distributions, binomial and normal distributions, sampling distributions, estimation, hypothesis testing, regression and correlation, analysis of variance, non-parametric methods. The student is also introduced to use of the computer in statistical computations and simulations by means of statistical packages such as MINITAB and SPSS. No prior knowledge of computing is required. Prerequisite: two years of high school mathematics. *Staff*.

161 Calculus I. F, I, and S, honors section, core. Functions, limits, derivatives, applications of derivatives, integrals, exponential and logarithmic functions. Prerequisite: high school mathematics through trigonometry or 110. *Staff*.

162 Calculus II. F and S, honors section. Trigonometric functions, techniques of integration, applications of integrals, sequences and series. An introduction to partial derivatives and multiple integrals. Prerequisite: 161. *Staff*.

231 Differential Equations with Linear Algebra. F and S. Solutions and applications of first and second order ordinary differential equations. Elementary linear algebra. Higher order linear equations, systems of linear differential equations, numerical methods, non-linear equations. Prerequisite: 162 and experience in computer programming. *Staff*.

243 Statistics. F and S. Data collection, random sampling, experimental design, descriptive statistics, probability, random variables and standard distribution, Central Limit Theorem, statistical inference, significance tests, point and interval estimates, and simple linear regression. The student is introduced to the use of the computer in statistical computations and simulations by

means of statistical packages such as MINITAB and SPSS. Prerequisite: 162. *Staff*.

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

255 Applied Linear Algebra. F and S. Matrices, row operations, systems of linear equations, pivoting strategies, vector spaces, linear independence, dimension, orthogonality, determinants, eigenvectors and eigenvalues. Emphasis on computations with matrices. Prerequisites: 162 and experience in computer programming. *Mr. D. Brink*.

261 Multivariate Calculus. F and S. A study of vectors and functions in two and three dimensions. Polar, cylindrical, and spherical coordinate systems. Partial derivatives, multiple integrals, vector functions, vector analysis. Prerequisite: 162. *Staff*.

321 Foundations of Geometry.* S. Consideration of Euclidean geometry as an axiomatic system, introduction to non-Euclidean geometry, the Poincare model. Prerequisite: a 200-level course. *Mr. P. Boonstra*.

325 History of Mathematics.* S. A study of the historical development of certain basic mathematical concepts from early times to the present, with consideration of the problems that mathematicians have faced in each age. Prerequisite: a 200-level course. Not offered 1983-84.

333 Advanced Calculus for Applications. F. Fourier series, Laplace transform, series methods in ordinary differential equations, orthogonal functions, vector field theory, and partial differential equations. Intended for engineers, physicists, and others interested in applications of analysis. Prerequisites: 231 and 261. *Mr. J. Kuipers*.

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 equa-

tions, applications to matrix algebra, inversion of matrices, characteristic values. Also listed as Computer Science 335. Prerequisites: 255 and 261. *Mr. W. Dyksen.*

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. Prerequisites: two 200-level courses. *Mr. T. Jager.*

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. T. Jager.*

361 Real Analysis I.* F. The real number system, set theory, the topology of metric spaces, numerical sequences and series, real functions, continuity, differentiation, and Riemann integration. Prerequisites: two 200-level courses. *Mr. S. Leestma.*

362 Real Analysis II.* S. A continuation of 361. Sequences and series of functions, functions of several variables, Lebesgue integration. Prerequisite: 361. *Mr. S. Leestma.*

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. *Mr. G. Van Zwalenberg.*

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 1983-84.

385 General Topology.* F. Elementary set theory, topological spaces, separation properties and connectivity, continuous mappings, homeomorphisms, product and quo-

tient spaces, invariants under continuous mappings, compactness, metric spaces and completeness. Prerequisite: 261 or 362. *Mr. G. Venema.*

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

391 Colloquium. F and S, quarter course. Meets weekly for an hour for the presentation of various topics in mathematics, computer science, and related disciplines by students, faculty, and visiting speakers. Prerequisites: two 200-level courses. *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 mathe-

matics 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 1984 INTERIM

W11 **The Development of Geometry.** The development and history of Euclidean and non-Euclidean geometry is 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. Students are

expected to study and work on problems. Satisfies mathematics core. Prerequisite: an interest in geometry. *Mr. G. Van Zwalenberg.*

W50 **Optimization: Linear and Dynamic Programming.** This course surveys the standard procedures and problems in linear and dynamic programming. Background material from linear algebra is discussed first. Then the simplex method, the revised simplex method, and the duality problems of linear programming are carefully developed. Applications of the simplex method and its extensions include the general transportation problem, production scheduling and inventory control problems, diet problems, network flow problems, and others. Topics from dynamic programming include one-dimensional allocation problems, where Bellman's Principle of optimality will be introduced; multidimensional allocation problems and perhaps some smoothing and scheduling problems. If time permits, some discussion of selected topics in discrete event simulation will be included. Computer programming projects are required. Satisfies the interim requirement for mathematics majors. Prerequisite: 231 or 255. *Mr. D. Brink.*

IDIS W50 **Alternative Logics.** *Mr. T. Jager.*

Music

Professors J. Hamersma, H. Slenk (chairman), C. Stapert, †D. Topp, J. Worst
Associate Professors D. De Young, G. Huizenga, C. Kaiser, R. Rus
Assistant Professor M. Mustert

STUDENTS MUST COMPLETE 103, 104, 114, and 124 with a minimum grade of C (2.0) in each for admission to a music major concentration. Applicants will be informed of the department's action within a month after completing these courses. Various concentrations are offered by the department.

Programs for students preparing for graduate work in music. Students preparing for graduate study in music must take 103, 104, 113, 114, 123, 124, 203, 204, 213, 214, 223, 224, 303, and 304; 121, 131, 141, 161, or 171 each semester; 180 each semester; and four additional courses from one of the following areas of specialization: *music history*, 311, 312, 313, and approved interim courses; *theory-composi-*

tion, 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, 303, 304, and 339; 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, 339; 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, 339; two semesters of 110, 120, 130, 140, 150, 160, or 170; two semesters of 131, 141, 161, or 171; and one course elective in music.

Programs for students interested in church music. Students preparing for work in church music must take 103, 104, 113, 114, 123, 124, 180, 203, 204, 213, 214, 223, 224, 236, 237, 303, 304, and five and a half course units in one of the following areas: *organ*, 110 (first two semesters), 210 (six semesters including some directed field work and a public recital with scores), 130 (two semesters), 131 or 141 (two semesters), and an interim in church organ music; *choir*, 130 (six semesters), 110 or 120 (two semesters), 131 or 141 (six semesters), 337, 338, and an interim in church choir music which includes some directed field work and a public choral recital.

A six-course minor in church music includes 103, 113, 123, 236, 237, and three additional course units in organ or choir. The organ group requires six semesters of 110; 130; 131 or 141; and an interim in church organ music. The choir group requires four semesters of 130, two semesters of 131 or 141, two semesters of 110 or 120, and an interim in church choral music.

Programs for students interested in keyboard pedagogy. Students preparing for keyboard teaching must take 103, 104, 113, 114, 123, 124, 180, 203, 204, 213, 214, 233, two semesters in a faculty-directed ensemble, and four courses in one of the following areas: *piano*, 120 (four semesters), 220 (four semesters, including a half solo recital during the senior year), and an independent study in piano pedagogy;

organ, 110 (four semesters), 210 (four semesters, including a half solo recital during the senior year), and an independent study in organ pedagogy.

Programs for students with a liberal arts interest in music. A nine-course general education program is available for students not expecting to teach or to enter graduate school. This program includes 103, 104, 203, 204, 113, 114, 123, 124, and may be completed by either 233, 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 Mrs. Ruth Rus and the adviser for music education programs is Mr. Dale Topp. All transfer students must consult Mr. John Hamersma at their first registration for an evaluation of their transfer credits in music and to receive counseling into the appropriate sequence of music courses. During their first semester at Calvin, such students must validate their transfer credits in keyboard harmony and aural perception with Mrs. Marilyn Slenk and in aural perception with Mrs. Ruth Rus. Those not meeting minimum standards will be required to enroll in 113 or 123.

Core courses in music The fine arts core requirement may be met in several ways. Students with a minimal musical background may prefer 133, 236, 238, or 241. Students with greater musical background should take 233, 234, or possibly, 103. Because 103 satisfies the core requirement and is the initial course in all concentrations involving music, freshmen considering any of these programs should take 103 along with 113 and 123, both quarter courses, which are also part of such programs.

GENERAL AND CORE COURSES

133 **The Enjoyment of Music.** F and S, core. An introductory course in music listening for students of any class level with any sort of background in music. Following a two-week introduction for all students, each student will elect four three-week units from the list that appears below. Each unit consists of eight classroom presentations and discussions plus a final test. Each unit will be completed before the next begins. Students will do listening and reading assignments. Topical units will be chosen from: oratorio, symphony, program music, opera, pre-Baroque music, instruments of the orchestra, church music, the avant garde, choral music, and solo songs. *Mr. C. Kaiser, Mr. H. Slenk, Mr. D. Topp, and staff.*

233 **History of Music I.*** F, core. A survey of the stylistic development and the cultural context of the art of music in Western civilization. The course begins with an introduction to musical thought and practice in antiquity and the early Christian era followed by a study of representative Gre-

gorian chants and the principal repertoires of polyphony in the early Baroque period. *Mr. C. Stapert.*

234 **History of Music II.*** S, core. A survey of the stylistic development and the cultural context of the art of music in Western civilization from the late Baroque period to the present. The class will study representative works of major composers. *Staff.*

236 **The Enjoyment of Church Music.*** S, 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.*** S, core. A survey of five basic genres of popular American music showing their roots in European art music and in American folk music, particularly in country music, folk music, blues and jazz, popular music theater, and rock. *Mr. J. Worst.*

BASIC COURSES

103 Materials of Music I. F, core. A course in the development of the ability to grasp and 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.*

104 The Literature and Materials of Music II. S. A continuation of 103. A coordinated study of the historical theoretical and practical aspects of music by means of lectures, score study, written exercises, listening, performance, and reading. A study of the music of the late Baroque and of the Classical eras. Students intending to major in music must take 114 and 124 concurrently. Prerequisite: 103. *Mrs. G. Huizenga.*

113 Keyboard Harmony I. F, quarter course. A course in the development of the ability to play at the keyboard the rhythmic, melodic, and harmonic elements of music. The student is required to play all the major, minor, and modal scales as well as easy chord progressions using all the diatonic triads in root position and some in first and second inversion. To be taken concurrently with 103. Prerequisite: piano skills. Others will be required to take remedial piano. *Mrs. M. Slenk.*

114 Keyboard Harmony II. S, quarter course. A continuation of 113. The student is required to play progressions involving seventh chords in their various inversions, to demonstrate the ability to use secondary dominants at the keyboard, and to modulate to closely related keys by means of common chord and chromatic modulation. *Mrs. M. Slenk.*

123 Aural Perception I. F, quarter course. A course in the development of the ability to hear and to sing at sight the rhythmic, melodic, and harmonic elements of music. Rhythmic perception involves all note values and rests in various combinations, with an emphasis on duplet and triplet contrasts. Melodic perception involves all intervals smaller than an octave above and below a given note. Harmonic perception involves the major and minor triads in root position, first inversion, and second inversion as well as augmented and diminished triads. To be taken concurrently with 103. *Mrs. R. Rus.*

124 Aural Perception II. S, quarter course. A continuation of 123. Rhythmic perception in this course involves the use of ties and syncopation, melodic perception involves the intervals between the octave and the twelfth including one and two-part melodic dictation, and harmonic perception involves the dominant seventh chords as well as harmonic dictations using the chords and triads studied in 123. *Mrs. R. Rus.*

203 The Literature and Materials of Music III.* F. A continuation of 104. A study of the music of the Romantic era. Prerequisite: 104. Students whose programs require 213 and 223 must take those courses concurrently. *Mr. J. Hamersma.*

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 those courses concurrently. *Mr. H. Slenk.*

213 Keyboard Harmony III. F, quarter course. A continuation of 114. To be taken concurrently with 203. Prerequisite: 114. *Mrs. M. Slenk.*

214 Keyboard Harmony IV. S, quarter course. A continuation of 213. *Mrs. M. Slenk.*

223 Aural Perception III. F, quarter course. A continuation of 124. To be taken concurrently with 203. Prerequisite: 124. *Mrs. R. Rus.*

224 Aural Perception IV. S, quarter course. A continuation of 223. *Mrs. R. Rus.*

237 Conducting. S, half course. A course in basic, general conducting, normally taken in the sophomore year. Prerequisite: 103 or its equivalent. *Mrs. H. Van Wyck.*

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. Not offered 1983-84.

312 **Instrumental and Vocal Polyphony of the Late Baroque.*** F. A study of contrapuntal practice of late Baroque composers, principally J. S. Bach. Exercises in tonal counterpoint. Listening repertory of compositions. Prerequisites: 304 or 104 and 233. *Mr. H. Slenk.* Not offered 1983-84.

313 **Studies in Music History: Franz Joseph Haydn.** S. An intensive study of the music of Haydn, especially his symphonies and string quartets. Prerequisite: 203. *Mr. C. Stapert.*

315 **Arranging, Orchestration, and Scoring.*** F. Survey of the history of the orchestra and orchestration, and problems involved in writing for orchestra, band, and stage band. A survey of the technical limitations of each instrument and the human voice. Projects written by class members will be performed by department organizations whenever practicable. Prerequisite: 104. Not offered 1983-84.

316 **Arranging, Orchestration, and Scoring.*** S. Continuation of 315, which is prerequisite. Not offered 1983-84.

317 **Composition.*** F and S. Writing in contemporary forms and according to contemporary practice. Prerequisite: 104 or permission of the instructor. *Miss E. Brink.*

337 **Instrumental Conducting.** F, half course. A course in advanced conducting techniques appropriate to bands and orchestras. Prerequisite: 237. Not offered 1983-84.

338 **Choral Conducting.** F, half course. A course in advanced conducting techniques appropriate to choirs. Prerequisite: 237. Not offered 1983-84.

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

MUSIC EDUCATION

238 **Elementary School Music.*** F and S, core. A study of the content and methods for teaching music in the elementary school classroom. Includes consideration of philosophy and materials. This course is recom-

mended for elementary education students. (Music 339 is required of elementary music education majors.) Not open to freshmen. *Mr. D. Topp.*

339 **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. See fees on page 27.

INDIVIDUAL LESSONS

At least twelve lessons a semester are required and students taking individual lessons must also register for 180.

110 **Organ.** Quarter course. Individual lessons in organ emphasizing skills for the church organist. *Mrs. S. Boomsma, Mr. J. Hamersma.*

120 **Piano.** Quarter course. Individual lessons in piano. *Mrs. K. Henry, Mrs. T. Hoekman, Mrs. B. Mustert, Mrs. R. Rus, Mrs. M. Slenk, Mrs. L. Vanden Berg.*

130 **Voice.** Quarter course. Individual lessons in voice. *Mrs. T. Haan, Mrs. G. Huizenga, Mr. C. Kaiser.*

140 **Brasses.** Quarter course. Individual lessons in trumpet, horn, euphonium, trombone, or tuba. *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. *Staff.*

170 **Woodwinds.** Quarter course. Individual lessons in flute, clarinet, bassoon, saxophone, or recorder. *Mrs. R. Bylsma, Mr. M. Kornacki, Mr. B. Weinstein.*

210 **Advanced Organ.** Half course. Individual lessons for the music major concentrating in organ. *Mr. J. Hamersma.*

220 **Advanced Piano.** Half course. Individual lessons for the music major concentrating in piano. *Mrs. R. Rus.*

230 **Advanced Voice.** Half course. Individual lessons for the music major concentrating in voice. *Mr. C. Kaiser.*

240 **Advanced Brasses.** Half course. Individual lessons for the music major concentrating in trumpet, horn, euphonium, trombone, or tuba. *Mr. D. De Young.*

260 **Advanced Strings.** Half course. Individual lessons for the music major concentrating in violin, viola, violoncello, bass viol, or classical guitar. *Staff.*

270 **Advanced Woodwinds.** Half course. Individual lessons for the music major concentrating in flute, oboe, clarinet, bassoon, saxophone, or recorder. *Staff.*

CLASS LESSONS

180 **Repertory Class and Studio Classes.** F and S, 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.*

196 **Brass Methods.** S, half course. Class lessons on all brass instruments for the instrumental music education major. Emphasis is on the methods for teaching brass instruments. Elementary playing skills are developed. *Mr. D. De Young.*

197 **Percussion Methods.** F, half course. Class lessons on percussion instruments for the instrumental music education major. Emphasis is on the methods for teaching percussion instruments. Elementary playing skills are developed. Not offered 1983-84.

198 **Woodwind Methods.** S, half course. Class lessons on all woodwind instruments

for the instrumental music education major. Emphasis is on the methods for teaching woodwind instruments. Elementary playing skills are developed. Not offered 1983-84.

ENSEMBLES

Membership in ensembles is limited to Calvin students except when there is a specific need and the non-student is not replacing a student.

101 **Men's Choir.** F and S, no credit. Open to general college students. *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. R. Bylsma, Mr. D. De Young, Mr. C. Stapert.*

131 **Campus Choir.** Quarter course. Representative works in the field of choral literature are studied and sung. Emphasis given to the development of singing and sight-reading skills as well as to regular performances. Open to music majors and others who meet the requirements of voice and musicianship. *Mr. M. Mustert.*

141 **Capella.** Quarter course. Representative works in the field of choral literature are studied and a limited number of selections are prepared for concert performance. Membership is maintained at a set limit and is open only to those who meet the demands of voice, sight reading, and choral musicianship. *Mr. M. Mustert.*

161 **Concert Band.** Quarter course. Representative works in wind literature are studied and prepared for concert performance. The Calvin College Band membership is maintained at a set instrumentation and is open to students from all classes who play a wind or percussion instrument and 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. De Young.*

181 **Oratorio Chorus.** No credit. The study of representative works of the great masters of choral writing with a view to public performance. Handel's *Messiah* is performed annually at Christmas time and another oratorio is presented in the spring. Open to all who meet the requirements of voice and musicianship. *Mr. H. Slenk.*

GRADUATE COURSES

510 **School Choral Music.** An examination of the significant choral literature from the Renaissance to the present day. For daily research projects the student will use the reference works, scores, and recordings in the Calvin libraries. The instructor will call attention to the repertoire suitable for junior and senior high school choirs. Prerequisite: undergraduate major or minor in music or permission of instructor. *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 1984 INTERIM

W10 **Singing Hymns with Mind and Spirit.** An introduction to the literature, theology, structure, meaning, history, and use of hymns and psalms. The course aims to equip students for richer worship with hymns and includes a review of the work of the Psalter Hymnal Revision Committee. Lectures, singing, demonstrations, readings, discussions, tests, and several short projects. No previous musical knowledge required. *Mr. J. Hamersma, Mr. D. Topp.*

W11 **Understanding Music.** A course designed to help students acquire a basic working knowledge of the elements of music, increase their listening skills, and develop a greater understanding of music and a firmer foundation for evaluating it. The rudiments of rhythm, melody, and harmony are taught and then illustrated in a wide variety of musical pieces which are also studied in terms of tone color, texture, and form. Some of the same compositions are studied within their cultural contexts to demonstrate how music is influenced by its environment and how a knowledge of that environment can enhance one's understanding of the music. Textbook and other readings; drills on rhythm, melody, and harmony; written assignments, and an examination. Prerequisite: the ability to read music in one clef. *Mr. C. Stapert.*

W50 **Deeds, Words, and Music.** This course is an attempt to understand the thought and imagination of the past through an examination of art with an emphasis on music. As John Ruskin wrote: "Great nations write their autobiographies in three manuscripts, the book of their deeds, the book of their words, and the book of their art. Not one of these books can be understood unless we read the two others, but of the three the only trustworthy

one is the last." This course demonstrates the truth of that quotation by studying the great intellectual movements in Western civilization from the medieval to the modern period. The basis of the course is the film of Kenneth Clark's television series "Civilization", augmented by lectures and discussions illustrating the expression of the mind of the age in music. Readings in Clark's *Civilization* and representative authors. Listening assignments from representative musical works. Quizzes and final examination. Prerequisite: sophomore status or higher. *Mr. H. Slenk.*

W51 A Survey of Choral Literature. A study and examination of significant choral literature from the Renaissance to the present. The student will use reference works, scores, and recordings in the Calvin library. Emphasis is on repertoire suitable for school and church choirs. Readings are assigned daily in the text. Attention is given to choral

techniques as they apply to various types of literature and to various levels of voice development. Quizzes, group projects, a major paper, and a final examination. Ideal for the vocal music education major. Prerequisites: 103, 104, and 203. *Mr. M. Mustert.*

W52 Playing the Piano for Pleasure. This course is designed to inspire students who stopped taking piano lessons when they were younger and have since regretted it. The course emphasizes basic technical and musical skills and their application to the interpretation of classical piano literature. It includes class lessons, demonstrations, recordings, and performances. There will be a practice break built into the daily class schedule, but additional practice and Listening Center time will be required. Prerequisite: some previous piano playing experience, some ability to read at sight, and permission of the instructor. *Mrs. R. Rus.*

Nursing

Associate Professor C. Kielinen (chairman)

Assistant Professors C. Danford, B. Gordon, T. Mansen, J. Martin, E. Moore

Instructors L. Burden, M. Doornbos, S. Matyas, D. Rubingh, B. Timmermans

Teacher-Practitioners J. Staufenberg, K. Wyngarden (Holland Community Hospital)

STUDENTS SHOULD INDICATE their interest in nursing at the time they apply for admission to the college. They should start work on their pre-nursing requirements in their freshman year, following the suggested program closely. Transfer students who wish to be considered for admission to the nursing program should apply to the Office of Admissions of the college.

Students wishing to enter the Hope-Calvin Department of Nursing should make formal application to the department by January 15 of their sophomore year. Applicants should be aware that admission to the nursing program is selective and is not guaranteed by a student's acceptance to the college. Further information and application forms are available in the Department of Nursing and in the registrar's office. The Hope-Calvin nursing program is described in detail on page 70. Prospective students should consult Miss Cynthia E. Kielinen.

The baccalaureate nursing program requires fourteen course units: 301, 311, 321, 352, 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. *Mrs. J. Martin.*

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. *Mrs. L. Burden.*

321 Psychomotor Aspects of the Nursing Process. F. This course is designed to assist students in developing general physical assessment skills and basic procedural skills necessary for providing nursing care to clients. The course consists of two hours of theory presentation and three hours of laboratory per week. Prerequisites: admission to the nursing program and registration in 301 and 311. *Miss C. Danford, Mrs. S. Matyas.*

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 of theory presentation and two hours of seminar discussion each week. Prerequisites: 301, 311, 321, and registration in two sections of 375. *Staff.*

373 Acute Care Nursing. May-June Term. An in-depth exposure to the reality of nursing practice providing around-the-clock care for clients with alterations of health status. The four week experience includes application of nursing theory to practice and a clinical examination during the fourth week. Prerequisites: 352 and two sections of 375. *Staff.*

375 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 of theory presentation and two hours of seminar discussion each week. Prerequisites: 373, two sections of 375, and registration in two sections of 375. *Mr. T. Mansen.*

472 Individualized Clinical Nursing. I, half course. An individualized clinical nursing experience designed to meet specific learning needs of students. Students are given opportunities to synthesize their previous learning through caring for clients with complex health problems within a clinical setting. All nursing shifts and working days are used. The weeks include ninety-six hours of clinical practice. Prerequisites: four sections of 375 and 401. *Staff.*

474 Advanced Nursing Practice. S, two course units. This course is divided into two parts. Each section focuses on a specific aspect of nursing practice. Students are given opportunities to explore roles and responsibilities in community health nursing and to assume nurse leader/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 seminar and eight

teen 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 profes-

sional nurse as a manager of nursing care for clients. Emphasis is given to multidimensional aspects of nursing, including research and degree of professionalism. Prerequisites: 472 and registration in 474. *Miss C. Kielinen.*

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, L. Hardy, 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 systematics course instead of 151–152, provided the historical period courses are chosen from 210, 220, and 230. A four-unit cognate sequence approved by the student's adviser is required in another department.

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.*

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, ex-

cept 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. C. Orlebeke, 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. 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. W. S. Vander Ploeg.*

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. T. Kennedy, Mr. R. Mouw.*

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.*** 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.** S. A history of philosophy from Augustine to the Renaissance. *Mr. K. Konyndyk.*

230 **History of Modern Philosophy.** F and S. A study of selected philosophies of the seventeenth and eighteenth centuries. *Mr. K. Konyndyk.*

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 1983-84.

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.*

322 **Thomas Aquinas.** F. A course in Thomistic thought which includes an analysis of portions of the *Summa Theologiae.* Not offered 1983-84.

331 **Kant.** F. A study of the *Critique of Pure Reason.* Not offered 1983-84.

332 **Hegel.** S. A study of Hegel's philosophy. Not offered 1983-84.

333 **Kierkegaard.** S. A study of selected philosophical works of Kierkegaard, focusing primarily on his philosophy of religion. Not offered 1983-84.

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. Not offered 1983-84.

335 **Nineteenth Century Philosophy.** F. A study of some major figures in nineteenth century continental European philosophy. Not offered 1983-84.

340 **Twentieth Century Continental Philosophy.** F. A study of major figures in recent phenomenology and existentialism. *Mr. L. Hardy.*

ADVANCED SYSTEMATIC COURSES

All advanced courses presuppose at least two courses in philosophy, normally two courses from the intermediate historical group.

365 **Ethical Theory.*** F. A critical examination of selected topics in ethical theory such as: "meaning" and "justification" in moral discourse, the distinction between "meta-ethics" and "normative ethics", recent conceptions of morality, and formulations of a divine command theory for ethics. *Mr. R. Mouw.*

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.*

390 **Readings and Research.*** F, I, S. Prerequisite: permission of chairman. *Staff.*

395 **Ontology.*** S. A study of selected topics of ontology. *Staff.*

GRADUATE COURSES

501 **The Educational Enterprise: A Philosophical Perspective.** An examination of factors presently operative in the educational enterprise from the perspective of the history of Western philosophy. *Mr. G. Mellema.*

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

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

JANUARY 1984 INTERIM

W10 **By the Sweat of Thy Brow: The Philosophy of Work and the Theology of Call-**

ing. Much time at college is spent in preparation for work of a specific kind, yet relatively little time is spent in reflection on the nature of work *per se*—its meaning, history, and place within our lives today. In this course students will have an opportunity to review the history of western attitudes towards work, examine the structure of work in our own society, and consider the Christian notion of "calling". Emphasis is placed on the impact the Christian might have on the institutional shape of work and the development of biblical guidelines for the responsible choice of a vocation. The course consists of lectures, films, student presentations, and an examination. Open to all who intend to get a job after graduation. *Mr. L. Hardy.*

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, students will take a fairly detailed tour of the writings of five or six authors on the question of the relationship of Christianity to scientific activity. Class presentation on independent reading and one ten-page paper. Prerequisite: one course in philosophy. *Mr. D. Ratzsch.*

IDIS W14 **The Ifs and Oughts of International Relations.** *Mr. R. Mouw.*

IDIS W15 **Human and Artificial Intelligence.** *Mr. C. Orlebeke.*

IDIS W50 **Alternative Logics.** *Mr. K. Konyndyk.*

Physical education

Professors J. Timmer (chairman), M. Zuidema

Assistant Professors R. Honderd, J. Pettinga, D. Tuuk, G. Van Anandel, N. Van Noord, D. Vroon, K. Wolters, D. Zuidema

Instructors E. Driesenga, N. Meyer

THE DEPARTMENT SERVES a number of functions—it provides a required but flexible sequence of physical education courses for all students; it offers profes-

sional 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 Andel.

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 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 they can also meet the requirement with 105 plus two quarter courses. 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 103 or 105. 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 taught how to make intelligent exercise decisions, and they are introduced to the idea that health fitness maintenance is a Christian responsibility. The course includes readings, lectures, and guided exercise sessions. *Staff.*

105 Health Fitness. F and S, half course. This course involves the study of positive health practices in health fitness, including cardio-vascular physiology, nutrition, and exercise. The course includes lectures, laboratories, and discussions along with three exercise sessions a week. This option is for students seeking a total health fitness building experience. *Staff.*

110-189 Guided Instructional Program. F, I, S, quarter courses. Various play and sport options are offered in this program. Students are introduced to the techniques and tactics of each sport and are given an opportunity to participate. Courses include: swimming, senior life saving, diving, archery, badminton, bowling, golf, handball, racquetball, tennis, gymnastics, weight training, basketball, volleyball, soccer, softball, folk and square dance, aerobics dance, orienteering, ice skating, cross-country skiing, and downhill skiing. Beginning and advanced skill classes are offered in most activities. Students should select courses that correspond to their skill levels. *Staff.*

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. It includes an examination of the various characteristics of the learner, an attempt to develop specific theories of how motor skills are acquired, and a review of teaching strategies that are appropriate for teaching them. The focus is on the learner, the learning process, and methods of instruction and includes an evaluation of growth and the developmental factors influencing learning. The course gives opportunities for practical experience in applying motor learning principles. This course substitutes for one course unit in the 230 series. *Mr. M. Zuidema.*

221 Elementary School Activities and Programs.* F and S, half course. The course provides a working knowledge of the fundamentals of physical education planning for elementary school children. It substitutes for one quarter course in basic physical education (110-198) for physical 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.

231 Basketball. F. Mr. D. Vroon. Not offered 1983-84.

232 Baseball/Softball. S. Mr. J. Pettinga. Not offered 1983-84.

233 Track and Field. S. Mr. R. Honderd.

234 Soccer. F. Mr. M. Zuidema. Not offered 1983-84.

235 Volleyball/Tennis. S. Mr. D. Vroon, Mrs. K. Wolters.

236 Football. F. Mr. J. Pettinga.

237 Gymnastics. S. Staff.

238 Wrestling. F. Mr. J. Pettinga. Not offered 1983-84.

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. Staff.

303 **Leadership in Recreation Programs.** S, half course. This course studies the organization of recreation programs and gives opportunity for observing programs in action, for structuring new programs, and for developing leadership skills. Miss D. Zuidema.

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. Lab-

oratory topics will include athletic injury treatment, taping techniques, and first aid procedures. May substitute for 230 in major programs with the approval of the department. Prerequisite: a biology core course. Mr. J. Timmer.

315 **Sociology of Sport.** S. A study of the social and social-psychological dynamics of sports in modern society. Areas receiving special attention are youth sports, interscholastic sports, and professional sports. Emphasis is put on describing and understanding sports participants, observers, and the relationship of sport as an institution to the rest of the social structure. Offered as Sociology 315. Mr. G. De Blaey.

380 **Individual Competences.** F, I, 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. Staff.

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 professional responsibilities. An understanding of the history and theories of play provide a framework for students working toward a Christian perspective on play and recreation and toward their own theories, programs, and practices. Prerequisite: completion of the non-professional courses in the major. *Mr. G. Van Andel.*

345 Field Instruction in Recreation. F and S. Students are assigned to work with field instructors in recreational agencies enabling them to understand the specific agencies and the types of services provided. Individual programs are worked out by the college supervisor, the field instructor, and the student to enable the student to achieve his professional goal. May be repeated once. Prerequisites: 304, 305, 310. *Mr. G. Van Andel.*

346 Field Internship in Recreation and Seminar. F and S, two to four course units. Students electing this course are involved full time in a semester's field experience in a recreational agency. An accompanying seminar on campus focuses on the problems of relating theory to practice. Prerequisites: 304, 305, 310, a minimum cumulative average of C (2.0), and the approval of the department. *Mr. G. Van Andel.*

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RECR 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 is placed on the therapist's role and the "therapeutic relationship". Lectures, discussions, 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. G. Van Andel.*

W12 Dance and Related Arts in Elementary 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 dance, design dances, and teach lessons involving dance. Discussions, readings, compilation of card file. No previous dance experience required. *Mrs. E. Van't Hof.*

W13 Preventive Health. An introduction to good and healthy living practices as measured by scientific data. The four main areas studied are nutrition, stress management, exercise, and the practice of a healthy spiritual attitude. Two books are required. Lectures, a paper, and an examination. *Mr. R. Honderd.*

W14 Application of Psychology to Athletics and Physical Education. The course is designed to answer how, when, and why psychological factors influence motor performance. Topics include psychological modeling, feedback, reinforcement, motivation, goal setting, the arousal performance relationship, controlling competitive anxiety, learned helplessness, and cognitive behavior modification. Students will be evaluated on class participation, homework, observation reports, and a comprehensive written examination. *Mrs. N. Van Noord.*

W15 Teaching Sports and Recreational Activities. This course acquaints the student with methods and materials needed to teach a variety of recreational activities. The student will gain experience through teaching lessons, participation, research, and field trips. The course covers indoor and outdoor sports and recreational activities such as golf, cross-country skiing, volleyball, etc. Open to Physical Education majors, minors, and Recreation majors. Fee of approximately \$15-20. *Mrs. K. Wolters, Miss D. Zuidema.*

W50 Christianity and Sport. This course is designed to challenge the student to develop his philosophy of sports play as a Christian. Topics such as amateurism and professionalism, educational institutions and sport, the ethics of sport, work and play, religion and sport, the Christian and sports competition, and modern practices in big-time sport are studied. Lectures, films, visit-

ing specialists, interviews, and readings. The course concludes with a take-home exam as a summary of the student's views of sports, play, and competition. Prerequisite: Philosophy 151, 153, or permission of the instructor. *Mr. M. Zuidema.*

W51 Baseball: Our National Pastime. Baseball is the American game. It began in North America and has become an integral part of our culture. Students will not only study the game from a historical and sociological perspective, but they will also attempt to learn why it appeals to people from a great variety of social and economic back-

grounds. They will study players who made contributions beyond the role of player—Babe Ruth, Jackie Robinson, Joe De Maggio, and a variety of others. They will study the way team loyalties have passed from generation to generation and how these are converted into statistics—home runs, batting averages, earned run averages, etc. Films, baseball literature, and memorabilia. This course is for those who like to watch and those who like to play the game. A textbook, reading reports of other reading, a research paper, and a final examination. Prerequisite: 201 or permission of an instructor. *Mr. J. Timmer, Mr. J. Pettinga.*

Physics

*Professors R. Griffioen (chairman), A. Kromminga, C. Menninga, *H. Van Till, †J. Van Zytveld*
Associate Professor D. Van Baak
Assistant Professor S. Haan
Instructor P. Naber

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 course unit of 390 involving a study topic appropriate for students planning to teach high school physics, and approved electives from advanced physics courses, Astronomy 201, and Geology 331.

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. Clarence Menninga.

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

A six-course minor concentration, which is also appropriate for teacher education, consists of 123, 124, 181, 182, 225, 226, 382, plus one and a half course units approved by the department chairman.

The physical science core requirement may be met by 110 or 112. Students preparing to be elementary teachers should take 112 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. *Miss P. Naber.*

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. C. Menninga, Mr. J. Ten Cate.*

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 comple-

tion of 181, Mathematics 161, and, if possible, Computer Science 141. *Mr. R. Griffioen.*

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 courses. This course is designed for those who do not intend to do further work in physics. The major areas of physics are discussed: mechanics, heat, electricity and magnetism, light, waves, relativity, and quantum theory. Laboratory. Prerequisites: plane trigonometry and high school algebra. *Mr. S. Haan.*

222 General Physics. S, core. One and one-quarter course. A continuation of 221, which is a prerequisite. Laboratory. *Mr. S. Haan.*

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 instru-

mentation, 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. A. Kromminga, 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 Schrodinger theory. Einsteinian relativity is also considered. Prerequisites: 225, Mathematics 261, and Computer Science 141. *Mr. R. Griffioen.*

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 380, or Engineering 208 or 308. Laboratory. Prerequisite: Mathematics 132 or 161. *Mr. J. Ten Cate.*

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. *Staff.*

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

ADVANCED THEORY COURSES

Prerequisites for all of the 300-level physics courses are Computer Science 141 or its equivalent as well as Mathematics 231 and 261.

335 Classical Mechanics.* F, alternate years. The motion of particles, of systems of particles, and of rigid bodies is studied by Newtonian and Lagrangian techniques. Topics included are: oscillatory motion, motion in a central force field, motion in non-inertial reference frames, motion of charged particles, and the inertia tensor of rigid bodies. Hamilton's canonical equations are developed and applied to simple systems. Prerequisite: 124 or 126. *Mr. R. Griffioen.*

345 Electromagnetism.* F, alternate years. The basic equations of classical electromagnetic theory are developed. Applications are made to electromagnetic fields in material media, boundary-value problems, electromagnetic energy, radiation, and physical optics. Relativity with its connection to this theory is studied. Static field theory is considered in 345 while dynamic field theory and special relativity are developed in 346. Prerequisite: 225. Not offered 1983-84.

346 Electromagnetism.* F, alternate years. A continuation of 345, which is a prerequisite. *Mr. D. Van Baak.*

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.*

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. S. Haan.*

376 Quantum Mechanics.* S. A continuation of 375, which is a prerequisite. *Mr. S. Haan.*

379 Contemporary Physics.* S. An introduction to the major areas of current research in physics. Primary emphasis is placed upon solid-state, atomic, nuclear, and elementary-particle physics. Prerequisite: 375. Not offered 1983-84.

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. R. Griffioen.*

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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W11 **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 disin-

terested in material possessions and made some interesting remarks 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. Students will do some elementary problem-solving in the area of the special theory of relativity. Midterm, final, and a paper. Satisfies physical science core. *Mr. A. Kromminga.*

W12 **Energy in the United States.** A consideration of the production, storage, distribution, and use of energy in the U.S. Topics covered include the scientific meaning of energy, the U.S. energy budget, the future of energy resources, the possibilities of energy conservation, the costs and risks of energy use, and the pros and cons of various means of energy production. Lectures, problems, field trips, an oral project report, and an optional term paper. *Mr. D. Van Baak.*

W13 **Introduction to Meteorology.** Meteorology is a science that deals with the atmosphere, its weather, and its effects on climate. The students will study weather conditions that make up climate, including temperature, solar radiation, precipitation, clouds, air pressure, and winds; natural factors that influence local weather conditions, such as altitude, latitude, and proximity to oceans and mountains; and descriptive elements of climate on the earth as a whole with special emphasis on North America. A look at man's impact on the atmosphere through pollution and climate control is included. Lecture, discussion, tests, and an optional short paper. A visit to a local meteorologist is planned. Prerequisite: one course in high school or college chemistry or physics. Physical science core. *Miss P. Naber.*

IDIS W12 **Our Daily Bread: Agriculture, Food, and World Hunger.** *Mr. H. Aay.*

Political science

Professors J. De Borst (chairman), R. De Vries, J. Penning, J. Westra
Associate Professors 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; one from 203, 206, and 303; 207; 305 or 306; and six additional courses in the department. Canadian students should take Political Science 210. Students planning to pursue graduate work in political science should take 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. Emphasis is on state policy making, urban politics, and metro-politics. *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,

China, and Eastern Europe. *Mr. C. Strikwerda.*

207 Introduction to International Politics. F. A study of power relations among nation-states analyzing different theoretical approaches to the study of international politics, describing the state system and its basis in the doctrine of sovereignty, and examining the phenomena of nationalism, imperialism, and war. Included are the problem of war and peace and how states try to resolve conflicts peaceably through diplomacy. *Mr. R. De Vries.*

209 Public Administration. S. An introduction to the political process. Principles of administrative organization, public 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) govern-

ment 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. Not offered 1983-84.

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.*

303 Comparative Government-The Non-Western World.* F. A study of the politics of Asian and African states. Emphasis is on the issues and problems posed by the modernization process. *Mr. R. De Vries.*

305 History of Political Thought to the Reformation. F. The development of political thought from ancient Greece to the sixteenth century. *Mr. 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.*

309 International Organizations.* F. An examination of regional and universal international organizations; their processes, functions, and impact on the international system. Special emphasis is given to the limitations and possibilities of the United Nations system. *Mr. R. De Vries.*

310 The Judicial Process and Civil Liberties.* S. A study of the judicial process in American politics. Special attention is given to the role of the Supreme Court, the power and practice of judicial review, and the Court's interpretations of the Constitution, especially in the area of freedom of ex-

pression and defendant rights. *Mr. J. De Borst.*

312 Legislative Behavior.* 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.*

313 Political Parties.* F. A study of political parties and their importance in the democratic political process. Particular attention is given to the organizational structure of parties, the role of parties in government, and the nature of public participation in and support for 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. Prerequisites: two political science courses, including 202, or permission of instructor. *Mr. J. Penning.*

390 Independent Study.* F, I, S. Reading or directed projects for majors. Open with the permission of the chairman and the instructor under whom the work will be done. *Staff.*

395 Seminar.*

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W10 The Political Novel. This course studies politics as seen through the eyes of the literary artist and depicted in works of fiction. Lectures survey the development of the political novel in England and the United States. Three American novels deal-

ing with politics in different settings—a large Eastern city, a southern state, and the U.S. Senate—are required texts. Students will also read and report on at least one novel of their choice. Discussion of texts, films. A reading list will be available in the Political Science office before Christmas. *Mr. J. Westra.*

W11 Political Campaigning. Students will consider the nature of American political campaigns and their role in the political system. They will explore campaign strategies and tactics, as well as ethical issues. Readings, the planning of an hypothetical campaign, and a written report on an actual campaign are required. *Mr. S. Monsma.*

W12 Women and the Law. An overview of legal issues of particular significance to women including: development and present status of constitutional rights of women including equal treatment of the laws and procreation (abortion) rights; women and the criminal law; women and family law; women and employment; women and credit; etc. Outside speakers, video tapes, films, and a field trip are planned. Daily reading assignments, several quizzes, and a final examination. *Miss M. De Stigter.*

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; the process of policy-making and the administration of public policy; and the ethical and legal considerations concerning the need for governmental secrecy and the public's right to know. Books, articles, films, and speakers. Two examinations and a paper. Prerequisite: 201 or permission of the instructor. *Mr. C. Smidt.*

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. A paper and two tests are required. Reading lists will be available in the Political Science office in December. Prerequisite: 151, 201, or permission of an instructor. *Mr. J. De Borst, Mr. C. Strikwerda.*

IDIS W14 The Ifs and Oughts of International Relations. *Mr. R. De Vries.*

Psychology

*Professors **M. Bolt, J. Brink, W. Joosse, A. Reynolds, R. Stouwie (chairman), R. Terborg, **M. Vander Goot, G. Weaver*
Associate Professors W. Sanderson, S. Stehouwer
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. 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 orientation to many of the central concerns of psychology, this course includes consideration of such issues as perception and consciousness, learning and memory, motivation and emotion, personality development and social interaction, stress and adjustment. Students are introduced to the methods of psychological research and to the role of psychology in scientific endeavor and human application. The psychology core requirements for students in teacher education programs should be met by Education 301 rather than by this course. *Staff.*

201 Developmental Psychology: Lifespan.* 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 or permission of the instructor. *Mr. W. Joosse.*

204 Developmental Psychology: Child.* F and S. A basic overview of normal development from birth to adolescence. Organization is chronological (infant, toddler, etc.) and conceptual (cognitive development, social-personality development, etc.). Not open to students who have taken or plan to take 201. Prerequisite: 151 or permission of the instructor. *Mr. 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.

Prerequisite: 151, Education 301, or permission of the instructor. *Mr. R. Stouwie.*

211 Personality and Adjustment.* F. A study of psychological theory and research pertinent to personality dynamics and adjustment. Coverage includes concepts of mental health, need fulfillment, sources of conflict and stress, the nature and effects of anxiety, the self concept, and principles of emotional and interpersonal competence. Attention will be given to the personal application of these topics. Prerequisite: 151 or permission of the instructor. *Mr. W. Joosse.*

212 Psychopathology.* F and S. A study of the wide range of abnormal behaviors. Emphasis is on causes, dynamics, and classification, with some attention to treatment approaches. Prerequisite: 151 or permission of the instructor. *Mr. 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 or permission of the instructor. *Mr. R. Stouwie.*

250 Statistics and Research Design.* F and S. An introduction to scientific research in psychology including the formulation of hypotheses, the design and execution of experiments, the analysis and interpretation of data through statistical procedures, and the communication of results. Two-hour laboratory each week. *Mr. A. Reynolds.*

306 History and Systems of Psychology.* F and S. A study of the origins of contemporary psychology within science and within philosophy, and of the development of various systematic approaches to psychology as a separate academic discipline in Europe and the United States. Prerequisites: two

courses in psychology or permission of the instructor. *Mr. W. Sanderson.*

308 Experimental Psychology.* S. A continuation of 250 with an emphasis on general research methodology at both the conceptual and applied levels. Consideration is given to topics such as the scientific study of human behavior, the formulation of research problems and hypotheses, research design, statistical inference, decision making, and the writing of research reports. For major and others interested in the social, behavioral, and health sciences. Prerequisites: 151 and 250 or permission of the instructor. *Mr. A. Shoemaker.*

310 Social Psychology.* F and S. A study of how people think about, influence, and relate to one another. Attention is given to such topics as persuasion and attitude change, conformity and obedience, group conflict and decision making, stereotypes and illusions of social thought, attraction and prejudice, altruism and aggression. Students may not receive credit for this course and Sociology 310. Prerequisite: 151 or permission of the instructor. *Mr. M. Bolt, Mr. J. Brink.*

311 Theories of Personality.* F. An introduction to modern American and European theories concerning the psychological structure, dynamics, and development of the human personality. Prerequisites: 151, 212, or permission of the instructor. *Mr. J. Brink, Mr. W. Sanderson.*

312 Principles of Psychological Measurement.* F. An introduction to theoretical and practical issues of psychological testing as they relate to assessment, selection, and classification of personnel. Prerequisite: 250 or permission of the instructor. *Mr. A. Reynolds.*

313 Mental Health and the Classroom.* F. An introduction to the developmental needs and common developmental crises of school age children. Emphasis is on the methods of communication and classroom management which allow the teacher to promote healthy adjustment. (Previously 335.) Prerequisite: 151, Education 301, or permission of the instructor. *Mr. S. Stehouwer.*

314 Theories of Counseling and Psychotherapy.* F. An introduction to counseling and psychotherapeutic methods for dealing with emotional disorders. The course in-

cludes an overview of major approaches to counseling and psychotherapy with an analysis of the theoretical aspects and techniques employed. An attempt is also made to integrate these various approaches and to view them from a Christian perspective. Prerequisite: 311 or permission of the instructor. *Mr. S. Stehouwer.*

315 Practicum in a Clinical Setting.* S. An introductory course in theoretical and applied psychotherapy, taught in a hospital setting, and appropriate for students interested in clinical and general psychology. This course deals cognitively and critically with various modes of psychotherapy from a Christian perspective, gives the student an acquaintance with a variety of mental hospital procedures, and offers the opportunity to begin in a minimal way and under supervision some direct experience with the disturbed. Prerequisites: junior-senior standing; departmental approval; 151, 212, and 311. *Staff.*

322 Perspectives of Psychology.* S. The purpose of this course is to explore the relationship of psychology to—its involvement in—such areas as literature, religion, art, and morality. This course will develop a Christian view of the historical and philosophical background of psychology. Not offered 1983-84.

323 Psychology and Religion.* F. A consideration of relationships between psychological explanations and religion. The course includes discussions of several major psychologies of religion, recent theory and research on the psychological dimensions of religious praxis, and the possible relationships between psychological and theological explanations of human action. Prerequisite: 151 or permission of the instructor. *Mr. G. Weaver.*

330 Psychology of Motivation.* S. A thorough discussion of the psychological study of motivation. Recent research findings as well as theory formation in the areas of emotion and motivation are included. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Mr. G. Weaver.*

331 Psychology of Sensation and Perception.* F. A detailed examination of the theories and research pertaining to various sensory and perceptual processes in human beings. Methodological, physiological, and pretheoretical issues are addressed. Two-

hour laboratory each week. Prerequisite: 151 or permission of the instructor. Not offered 1983-84.

332 Psychology of Learning Processes.* F. A consideration of the relationship of empirical findings and theoretical formulations to various learning processes. Included are such issues as the role of reinforcement and punishment; methods of enhancing or suppressing performance; biological limits on learning; stimulus generalization and discrimination learning; the structure and organization of memory; and factors related to forgetting and retention. The importance of learning theory for psychology in general is stressed. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. *Mr. R. Terborg.*

333 Physiological Psychology.* S. An intensive investigation of the physiological bases of behavior. Theories and research concerning the relationship between the nervous system and several aspects of behavior will be discussed. Discussion of the mind/brain problem. Two-hour laboratory each week. Prerequisite: 151 or permission of the instructor. Not offered 1983-84.

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 or permission of the instructor. *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 or permission of the instructor. *Staff.*

GRADUATE COURSES

510 Educational Measurement. This course provides a theoretical and practical background which will enable classroom teachers to construct or select tests for specific purposes. It is designed to enable teachers to use test scores wisely and effectively in the learning process. A major paper requires knowledge and application of the concepts of reliability and validity as well as practical considerations in the evaluation

of a standardized test of the student's choice. *Mr. A. Reynolds.*

511 Introduction to Guidance and Counseling. A survey of principles, major theories, and resources which shape guidance and counseling efforts in the schools. The course focus is on how a teacher can best contribute to and benefit from those efforts. *Mr. S. Stehouwer.*

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

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

JANUARY 1984 INTERIM

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 implications of this vital doctrine for the social sciences are considered, together with an emphasis on the clarification and discussion of the theological ideas developed by Berkouwer. Brief daily papers. *Mr. W. Sanderson.*

W11 Psychology of Social Conflict. This course explores psychological theory and research on interpersonal, intergroup, and international conflict. Both the reasons for social conflict and the strategies for resolving it constructively and peacefully are considered. Readings, lectures, discussions, films, and group exercises. Three written tests on readings and classroom materials. *Mr. M. Bolt, Mr. J. Brink.*

W12 The Psychology of Interpersonal Relationships. Students will investigate the psychology of interpersonal relationships—particularly one-to-one relationships—and examine their initiation, development, and patterns of interactions. Discussion includes topics such as roles, motives, aspirations, expectations, communication, self-disclosure, and resolution of problems. The course involves lectures, written work, small group discussions, analysis of case studies, films, and video tapes. Not open to students who have completed W56, *The Psychology of Close Personal Relationships.* *Mr. A. Shoemaker.*

W50 Christian Perspectives on Parenting. An introduction to parenting in the context of a Christian commitment. The course includes an analysis of family life and the interrelationships among family members throughout their life span as children and parents. Relevant research on approaches to parenting and on the behavior and emotional development of children. Discussion of such topics as preparing for a child, biblical perspectives on authority and discipline in the home, parent-child relationships over the course of development, the working parent, day care, single parenthood, aging parents, parenting an adopted child, choosing the nonparent role, and the role of the school in parenting. Readings, presentations by the instructors and resource persons, supplementary films, case studies, group activities, role playing. Prerequisites: 151 or Education 301 and junior or senior

status. *Mrs. N. Stehouwer, Mr. S. Stehouwer.*

W51 The Psychology of Individual Differences. An examination of the effect that individual differences such as intelligence, sex, cognitive style, and particular personality traits have on the behavior of the individual. These differences are measured by both verbal methods and non-verbal techniques, such as dream and handwriting analysis. Lectures emphasize the concrete and theoretical issues of the study of individual differences. A paper on an individual or group research project and an examination are required. Prerequisite: sophomore status or higher. *Mr. A. Reynolds.*

IDIS W13 Fish: A Natural Resource. *Mr. R. Terborg.*

IDIS W16 Common Christian Struggles. *Mr. W. Joosse.*

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

Multicultural Lecturer S. Escobar

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, Music 236, or Religion 332; Psychology 151 and 201, 204, or 207; Religion 245, 246, and 319; and Sociology 311. This minor program may be taken with a Religion and Theological major program. Students who plan to serve as directors of education in churches should do graduate work in Church Education. The adviser for this program is Mr. Henry Hoeks.

The teaching minor leading to certification in the Academic Study of Religions requires 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, Religio-cultural, and Missions and World Religions. An appropriate interim course may be included in any of these programs with the approval of the chairman.

The core requirements in religion and theology are met by selecting one from the following courses in Biblical studies: 103, 108, 207, 208, 327, and 328, and one from the following courses in Theological, Historical, and Religio-cultural studies: 206, 301, 303, 304, 308, 311, and 312. Any departmental course except interims may be chosen by students electing a third core course in religion and theology.

BIBLICAL STUDIES

103 **Biblical Theology.** F and S, core. A study of the unfolding of the history of redemption as set forth within the historical framework of the Old Testament, intertestamentary, and New Testament eras. Biblical books and Apocryphal literature are analyzed and the major themes of Scripture are explicated. Students may not take this course and 108. Open only to freshmen and sophomores. *Staff.*

108 **New Testament Biblical Theology.** F and S, core. A more complete coverage of the biblical theology of the New Testament than can be offered in 103. Open only to freshmen and sophomores. *Mr. D. Holwerda.*

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. *Mr. W. De Boer.*

302 **Biblical Archaeology.*** S. A study of the pertinent archaeological data which provide a background for or throw light upon the biblical narrative. Prerequisites: one course in Biblical Studies and junior or senior standing. Not offered 1983-84.

327 **Old Testament Interpretation.*** F, core. An intensive study of the basic principles and methods of biblical interpretation developed in the context of the biblical-theological themes of the Old Testament. Designed especially for departmental majors. Prerequisite: junior or senior standing. *Mr. C. Vos.*

328 **New Testament Interpretation.*** S, core. An intensive study of the basic principles and methods of biblical interpretation developed in the context of the biblical-theological themes of the New Testament. Designed especially for departmental majors. Prerequisite: junior or senior standing. *Mr. D. Holwerda.*

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 the-

ologians. 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. In acknowledgement of the 500th celebration of Luther's birth, the course will give special attention to comparing Luther's and Calvin's theology. 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.

313 Roman Catholic Theology. S. The development of Roman Catholic theology from the medieval era to present times, finding its climax in contemporary changes growing out of Vatican II. The Council of Trent, Counter-Reformation theology, papal encyclicals, Vatican I, and major schools of thought and shifting practices will be examined. Prerequisite: junior or senior standing. Not offered 1983-84.

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

251 Humanity, History, and Liberation. F. A study of the culture of oppression in contemporary Latin American history and the elements of self-understanding in Latin American thinkers that have provided a background for contemporary theologies of liberation. Special attention is given to anthropological and historical studies of coincidences and oppositions to evangelical theology. The role of Marxism in this process will be analyzed and evaluated. Mr. S. Escobar.

252 Protestant Thought and Modernity. S. A comparative evaluation of the theological insights of several modern Christian laymen from a Protestant background: Jacques Ellul, Paul Tournier, C. S. Lewis, Peter Berger, and Donald M. Mackay. A study of their contribution to a Christian criticism of contemporary systems; the constructive elements of their praxis and thought; and their relevance for the Third World. Mr. S. Escobar.

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. Not open to freshmen. Mr. P. Holtrop.

332 Christian Liturgy.* S. A study of the development, theology, and practice of Christian liturgy from its biblical beginning to the contemporary liturgical renewal movement. Synagogue and early Christian precedents, Roman Catholic and Eastern Orthodox liturgical development, Reformation protests and emphases, and the recent liturgical resurgence are examined. Prerequisite: one course in biblical studies, preferably 103. Mr. N. Wolterstorff.

The following interdisciplinary course may be applied to certain concentrations in the department:

234 **The Contemporary American Religious Situation.** Mr. J. Primus, Mr. W. Smit.

MISSIONS AND WORLD RELIGIONS

203 **Theology of Mission.** F. A survey of biblical material pertaining to mission. These materials are used in evaluating the contemporary problems of mission: i.e., re-nascent non-Christian religions, ecumenism, mission in the ferment of social revolution. Not open to freshmen. Not offered 1983-84.

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.

253 **Evangelical Missiology: A Third World Perspective.** S. A description of the history and of the contemporary situation of Protestantism in Latin America. The way the Third World looks at the fruits of foreign missionary work in the area and what it thinks can and should be the agenda of evangelical missiology. Attention is paid to the areas of Christology, ecclesiology, social ethics, and the urban church. An examination of the way the different Protestant traditions have left their marks on the new churches which have developed in the area and the possibilities of contributions from the various Protestant traditions to a new and developing missiology. Mr. S. Escobar.

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. Not offered 1983-84.

390 **Independent Study.** Staff.

395 **Seminar: Religion and Education.*** F. A course for seniors in the Academic Study of Religions minor. It includes practical and bibliography work and concludes with a major research paper. Mr. H. Hoeks.

396 **Seminar: Religion and Theology.*** S. A course for senior majors in Religion and Theology which provides a focus on signifi-

cant theological issues and on theological bibliography. A major research paper is required. *Mr. G. Spykman.*

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 1984 INTERIM

W10 Thomas Merton: Man of Prayer, Writer, Social Critic. A study of the spiritual pilgrimage of the late monk, Thomas Merton, from the Abbey of Gethsemani in Kentucky. After an introduction to the contemplative tradition within Christian history, the major emphasis is on reading Merton (1915-1968) and working toward a Reformed view of spirituality. The course includes a one-week stay at the Abbey of Gethsemani in Trappist, Kentucky. Several tests. Fee of approximately \$175. Permission of the instructor. *Off-campus. Mr. D. Cooper.*

W11 Bible Stories: What's Going On? Subtle and interesting things are going on in the extended narratives of the Bible—stories such as those of Jacob, Joseph, Samson,

Saul, David, and Elijah—which have far more significance than providing entertainment or teaching moral lessons. Current biblical study is giving much attention to "the art of biblical narrative". This course investigates the literary devices at work in biblical stories and the broader theological views and purposes of several narrative sections of the Bible. Readings, lectures, discussions, a research project, and a final examination on assigned areas. *Mr. W. De Boer.*

W12 Children in the Church's Worship. How can young children be involved meaningfully in public worship services? Should the whole family praise, pray, and listen together or should youngsters worship separately "on their own level"? Is there a better middle way? This course explores children's role in worship historically and concentrates on theological, developmental, and pedagogical reflection on this issue. Requirements include two Sunday observations of children's worship activities in local Protestant churches, written reflection on observations, development of one liturgy for children, and regular engagement in readings, lectures, and class discussions. Weekly tests on readings and presentations. *Mr. H. Hoeks.*

W13 Woman: An Indispensable Help or a Necessary Evil? Students will study the role of woman as expressed in the writings of the theologians of the church from the second century A.D. to the present. Did Tertullian really say of woman, "You are the devil's gateway," and Aquinas, "Woman is defective and misbegotten"? They will attempt to analyze how the opinions of the church leaders influenced the role of women in the church. They will also study the role of women in the Christian community throughout these centuries. This course has a theological and historical focus rather than a biblical-hermeneutical one. Readings, lectures, discussions, reports, and papers constitute the components of the course. *Mr. L. Vos.*

W50 Israel: Yesterday and Today. The course allows the student to put a primary emphasis on either the Israel of yesterday or the Israel of today, and on the 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 first week, students will tour Jordan and Israel. The next two weeks will be spent at the Jerusalem Center for Biblical Studies with classes and field trips to Southern Israel, Upper and Lower Galilee, as well as Samaria. Opportunity will be given to attend cultural events. A reading list for each of the foci is available. A daily journal is required; a paper on assigned readings is required for honors. Fee of approximately \$1,900. Prerequisite: permission of the instructor. Off-campus. *Mr. C. Vos.*

W51 Introducing Martin Luther at Calvin. In commemoration of the 500th anniversary of Luther's birth, this course emphasizes the early and middle periods of Brother Martin's life in the context of the late-medieval church and the society in which he lived. The circumstances of his youth, the sources of his ideas, the development of his theology, and the reception of his thought are considered. Questions addressed include: What did the 95 theses really state? When was his reformation "break-through"—before or after 1517? Is there a central theme in his thought? How did the common people receive his ideas? Was Luther a Lutheran? Lectures, discussions, student papers, films, video tapes, and guest speakers are included in this course. Prerequisite: sophomore status or higher. *Mr. J. Primus.*

W52 Great Theologians: Reliving Their Lives. This course is about theologians as real people, and about us—students and teachers—as budding theologians. How we theologize is closely related to our life experience

and to the historical context in which we mature. This holds for great theologians, too. Their theologies are an index to the moving events of which they were a part. What, for example, made Bonhoeffer the intriguing theologian he was? What about Luther, Calvin, Kuyper, Barth, Hoeksema, and others? The focus falls on how factors such as spiritual backgrounds and traditions, influential teachers, world wars, struggles for reformation, and church controversies helped to shape their thinking. The course includes the reading of biographies of great theologians; discussions of their lives, ideas, and influence; class reports; guest lecturers, audio-visual media; and a culminating diary-type paper. Prerequisite: one course in Religion and Theology. *Mr. G. Spykman.*

W53 Prophecy or Prediction? This course examines prophecy and prediction through such questions as: What is the nature of prophecy and how is it fulfilled? Is prophecy precise prediction or a promise capable of multiple fulfillments? Does prophecy predict the specific course of historical events? What does the Scripture itself indicate? In the light of the biblical answer, some time is spent examining prophecies not yet fulfilled, such as Mark 13 and parts of the Book of Revelation. Besides readings, lectures, and discussions, the course requires a student paper. Prerequisite: 103 or 108. *Mr. D. Holwerda.*

IDIS W28 Religion in Chinese Life. *Mr. J. Lagerwey.*

IDIS W51 The Wisdom of Many and the Wit of One: The Proverb in Literature and Life. *Mr. R. Van Leeuwen.*

IDIS W53 Radical Resocialization: The Study of "Conversion" to Alternate Lifestyles. *Mr. L. Sweetman.*

Sociology and social work

*Professors G. De Blaes, P. De Jong, H. Holstege, R. Rice, T. Rottman, W. Smit, D. Wilson
Associate Professors D. Smalligan (chairman), J. White*

THIS DEPARTMENT OFFERS courses in sociology, criminal justice, and social work. Sociology is the study of the principles of group relationships, social institutions, and the influence of the group on the individual. Criminal justice is the study of the nature of crime in society and the interrelationship among criminal law, social order, and social justice. Social Work is the study of the application of these principles and related theories to the helping professions. Programs in the department may lead to a departmental major in sociology, a group major in criminal justice, and a supplementary concentration in social work, which is open to both sociology and non-sociology majors.

The major concentration in sociology consists of 151, 318, 320, and six additional sociology courses, 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 twelve-course group major in criminal justice provides the theory, context, and practice needed to qualify graduates to make informed decisions in the area. It requires 151, 300, 301, 306, 313, two course units from Political Science 201, 202, 209, 210, 310, and Psychology 211, 212, 310, 311, an additional political science or psychology course from those listed or an approved interim course, and two courses from Philosophy 202, 205, 207, and Religion 311.

The group major prepares students for a variety of careers in law enforcement, working with the courts, and assisting with corrections and is helpful to those who expect to be involved with probation, parole, detention homes, half-way houses, police and security work, rehabilitation centers, and correctional facilities.

The supplementary concentration in social work consists of six courses, five of which are drawn from the departmental offerings in social work. The supplementary concentration includes three types of courses: social work theory courses, field work courses, and other courses which most nearly complement the practice of social work. The program consists of 300, 301, 303, two units of credit from 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 adviser. 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 organiza-

tions. All students in this concentration are required to have at least one hundred 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 217 and 311 may be a part of the teaching minor in the academic study of religions.

SOCIOLOGY COURSES

151 Sociological Principles and Perspective. F and S, core. A general introduction to the discipline. Provides a brief theoretical and conceptual grasp of sociology as a body of knowledge dealing with group relationships as these affect both the individual and society. An attempt is made to articulate this knowledge and to demonstrate its use by showing how a sociological perspective offers a rational interpretation of issues current in our society. *Staff.*

210 Physical Anthropology. 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.*

217 Social Anthropology. F and S, core. A study of the historical trends in anthropology that have led to its present day perspective. The concepts of functionalism and cultural relativism are examined and evaluated. The course surveys various cultural patterns around the world. *Mr. D. Wilson.*

253 Intercultural Communication. F and S. An examination of the anthropological principles relating to cross-cultural communication. This examination requires an extensive comparison of the components of the cultural systems and the nature of cultural dynamics. The areas of application include government, business, peace corps, development, and mission work, with special emphasis on the last two. Special topics include developing an appropriate attitude regarding indigenous cultures and the management of culture shock. *Mr. D. Wilson.*

302 Urban Sociology and Community Organization.* F 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. J. White.*

304 The Family.* F and S. An intensive culturally comparative and historical analysis of the family as an institution. The contemporary courtship, marriage, and divorce patterns of the American family are also discussed. *Mr. H. Holstege.*

306 Sociology of Deviance.* F 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. Not offered 1983-84.

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 the theoretical frameworks emphasizing self-concept and role playing. Students may not receive credit for this course and Psychology 310. *Mr. G. De Blaeey.*

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 1983-84.

313 The Criminal Justice System. F. A study of the nature of crime in society and the interrelationships among criminal law, social order, and social justice. Attention is given to theories and definitions of crime, its cause and control; changing ideas about the role of police, court, and prison personnel; and the place of the Christian community in developing and maintaining an improved system of criminal justice. *Mr. T. Rottman.*

314 Contemporary Social Problems. F and S. In the fall semester the course is taught by Mr. T. Rottman and is primarily concerned with the cultural and social responses to death and dying. It begins with a theoretical discussion of social problems generally and then relates these theories to the particular problems associated with death and dying from the perspective of contemporary culture and society, of those close to the dying person, and of the dying person himself. Attention is given to the extent to which conceptions and customs surrounding death and dying are functional in their own terms and compatible with biblical norms. In the spring semester the course is taught by Mr. J. White and is concerned with ethnic relations and the dynamic interaction among ethnic groups. Values, norms, roles, and institutions are investigated in terms of racism, ethnic pluralism, and assimilation. The perspective of the course is worldwide but the emphasis is on the United States. *Mr. T. Rottman, Mr. J. White.*

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 Blaeij.*

316 Social Gerontology. S. A cross-cultural examination of how various societies react toward the elderly. Specific substantive issues included are: discrimination against the elderly, familial relationships, social security, nursing home services, housing needs, and employment opportunities. There is an analysis of proposed changes in American society which would give assistance to senior citizens. *Mr. H. Holstege.*

318 Sociological Theory.* F. An assessment of sociological theory in terms of its historical development and current role in understanding human behavior. Particular attention is given to the function of theory in the research process. Direction is given to the student in the formulation of sociological hypotheses from data. Prerequisite: 151. *Mr. H. Holstege, 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. *Mr. P. De Jong, Mr. W. Smit.*

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

395 Seminar.*

SOCIAL WORK COURSES

300 Social Welfare Policy and Services. F. An analysis of the social welfare system. 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. *Staff.*

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. *Staff.*

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. *Staff.*

307 The History of Social Welfare and Social Work.

F. An 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. Not offered 1983-84.

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 status, 300

and 301, and departmental approval. *Mr. D. Smalligan.*

GRADUATE COURSES

501 School in Community. A study of the reciprocal relationship between the school and the community. Particular attention is paid to the interrelationship between the school and religious, familial, political, and economic institutions. *Mr. G. De Blaeys.*

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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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. W. Smit.*

W51 Issues in Residential Group Child Care. Students will examine basic issues in residential group 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; discipline; how children are encouraged to develop self-control and self-responsibility; how to develop group cohesion; and how the child care workers' values influence their work with children. Lectures, roleplays, structured exercises, and visits to agencies. An instructor from the Michigan Association of Children's Agencies Training Service will provide practical illustrations. Tests and papers. Prerequisite: junior or senior status. *Mr. D. Smalligan.*

W52 Prison: A Problem or a Solution? Too frequently we assert that "prisons don't work" without paying careful attention to the multiple and often conflicting expecta-

tions we have of them. Nor is careful attention given to possible alternatives to imprisonment, particularly those which are most compatible with a Christian sociological perspective. Students in this course will examine the historical impact that diverse images of man and society have had on the prison movement, as well as the contemporary status of prisons—particularly their relationship to philosophies and practices involving public safety, deterrence, rehabilitation, and moral retribution. They will consider possible alternatives to incarceration—such as restitution, community service, traditional probation, and diversion—and examine the role of prosecutorial, judicial, and administrative discretion. Lectures, class discussions, films, and a limited number of field visits which involve full-day commitments. Final evaluation involves an exam on texts and the lectures. Permission of the instructor. *Mr. T. Rottman.*

W53 Organized Crime and Substance Abuse. The purpose of this course is to analyze the role of Organized Crime in the distribution of illegal substances in the United States. Topics include the influence of Organized Crime on the political system, the criminal justice system, and the economic institution; the profits derived from the sale and distribution of illegal substances and methods used to maintain that distribution;

the ethnic, racial, and national aspects of drug distribution; and the attempts by criminal justice personnel to reduce the influence and activity of Organized Crime. The course consists of lectures by the instructor, guest lecturers, audio-visual presentations, and texts. Quizzes on the readings and a final examination. Prerequisite: a serious interest in the criminal justice system. *Mr. H. Holstege.*

W54 Liberian Interim Abroad. This course examines the various aspects of Liberian culture today—a traditional village, a Muslim village, a village undergoing rapid cultural change, and the modern, Westernized capital of Monrovia. The contrasts between the traditional and the Western, the Muslim and Christian, and the rural and urban are studied. Lectures are given by various Liberians regarding aspects of their culture and by non-Liberians regarding their work in Liberia. The four texts for this course will be available by May 1 for reading during the summer. A short paper is required on each text. In addition, a journal which both records daily experiences and attempts to interpret them in the light of Liberian culture is required while in the country. Student evaluations are based on the book reports, the journal, and one's participation in the daily discussions. Fee of approximately \$1,850. Permission of the instructor. *Off-campus. Mr. D. Wilson.*

Spanish

Associate Professors B. Class, S. Clevenger, E. Cortina (chairman)
Assistant Professor Y. Byam
Multicultural Lecturer S. Escobar

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. Ynés Byam.

During the spring semester Calvin offers a full-time language program in Spain by which students can complete 101, 102, 201, and 202, satisfying the core requirements for a bachelor of science degree. The college also has a working relationship with the Universidad Iberoamericana in Mexico City, permitting students to study there during the interim of either semester. The adviser for these programs is the chairman.

The fine arts core may be met by 217, 218, and 300-level literature courses.

LANGUAGE

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

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

121-122-123. **Introductory and Intermediate Spanish.** F, I, S. A closely integrated sequence involving two semesters and the interim for students who have completed two years of high school Spanish but who, on the basis of a placement test, are not prepared for 201. The course is also open with the permission of the department to students in the teacher education programs who have had no foreign language in high school. *Staff.*

201 **Intermediate Spanish.** F. Review of essential grammatical structures and further training in spoken and written Spanish. Readings from significant Spanish authors. Prerequisites: 101 and 102 or other equivalents. *Staff.*

202 **Intermediate Spanish.** F and S. Continuation of 201. *Staff.*

215 **Advanced Grammar and Conversation.*** S. A course for the student who wishes to improve his facility in the language, who is preparing for graduate study, or who expects to teach Spanish. The course includes the intensive study of grammar, vocabulary, and idioms as well as intensive use of drills and exercises to develop competence in speaking and writing idiomatic Spanish. The emphasis is on improved pronunciation and fluency through conversation, debates, and oral presentations. Prerequisite: 202 or its equivalent. *Mrs. Y. Byam.*

216 **Advanced Composition and Translation.*** F. Extensive work in composition and translation to develop skill in written communication for students interested in teaching or in continuing their studies in graduate school. Reading selections by well known writers from various genres serve as models. A major paper in Spanish is required. Prerequisite: 202 or approval of instructor. *Mrs. E. Cortina.*

LITERATURE

217 **Readings in Spanish Literature.** F. An introduction to the major writers and movements in Spanish literature from the Middle Ages to the present. Conducted in Spanish. Prerequisite: 202. *Mrs. S. Cleveenger.*

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. Not offered 1983-84.

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 1983-84.

306 Latin American Poetry. F. A study of the history and characteristics of Latin American poetry from the colonial period to the present. Conducted in Spanish. Prerequisite: 218. Not offered 1983-84.

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.*

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. Not offered 1983-84.

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. Not offered 1983-84.

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 1983-84.

372 Latin American Civilization. S. This course introduces the students to the culture of Latin America. Material covered includes historical backgrounds of the various countries; political, social, and religious institutions and values; and non-literary expressions. Reading materials include literary and non-literary sources. Conducted in Spanish. Prerequisite: 202 or the equivalent. Not offered 1983-84.

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. Not offered 1983-84.

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

395 Seminar.*

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W10 The Social Consciousness in Latin American Poetry. Latin American poets have been, by and large, the spokesmen of the political and spiritual values of their peoples. Since the Independence period, the poets have served to mirror, to suggest, and to call for changes in the established order and in the power structure. Their themes echo the larger question of injustice in Latin America and find expression in criticisms of Spanish and Portuguese colonialism, Latin American tyrants, economic dependency on the United States, political meddling by multinational corporations, internal political dissension, anti-Semitism, racial discrimination, and the sexual double standard. Common alternatives are Marxism, Feminism, and Liberation Theology. Students explore possible ways in which Reformed Christian political theory, particularly that of Abraham Kuyper, may speak to the issue of injustice in Latin America. All readings are in English. Speakers and films complement readings and lectures. A project paper is required. *Mr. B. Class.*

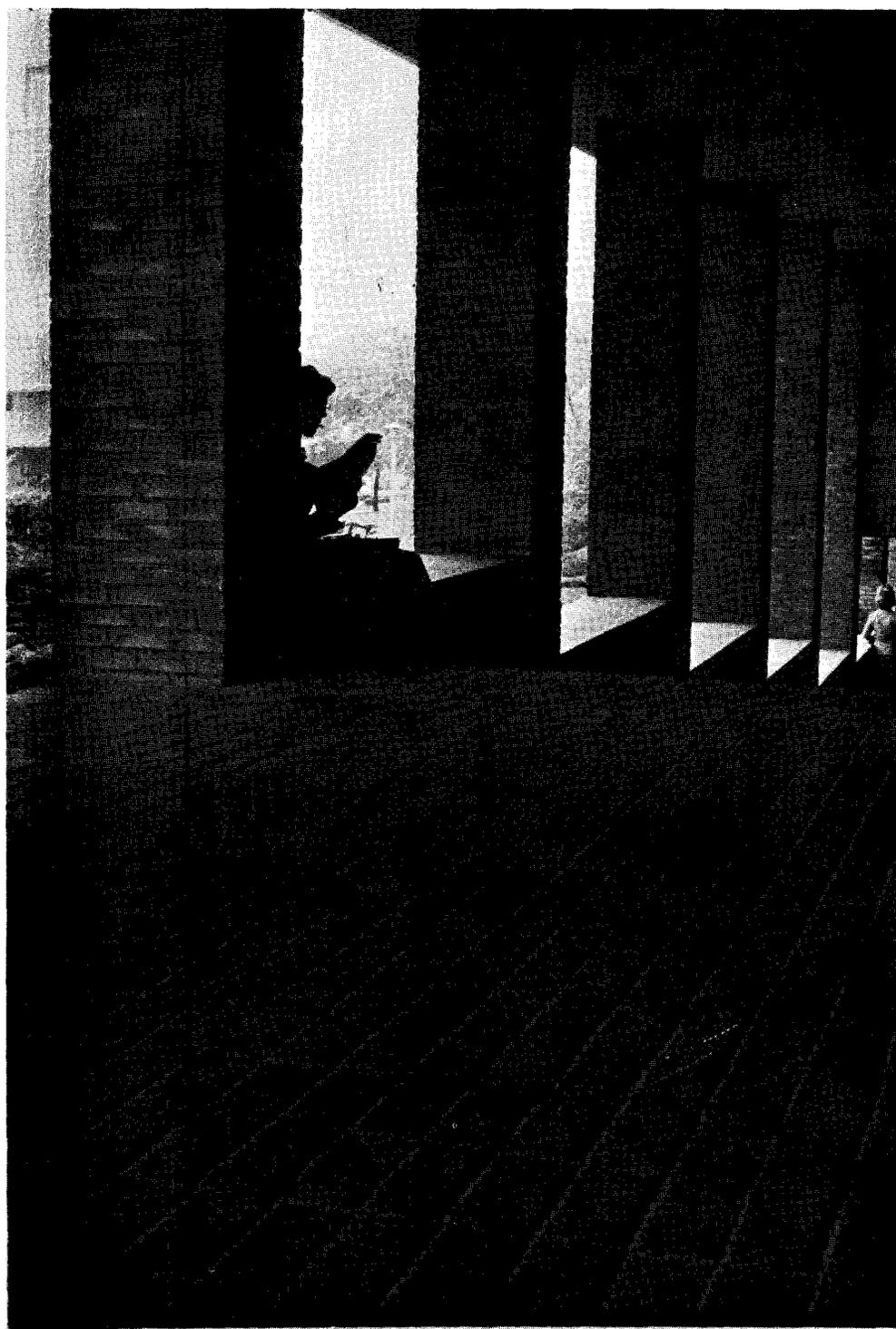
W11 Introduction to Spanish Culture. This course is an introduction to all aspects of Spanish life—race, history, religion, government, family, education, cuisine, music, and style of life in general. Particular emphasis is placed on the primary differences between Hispanic and North American cultures. In addition, students are introduced to "survival" Spanish, learning the basic vocabulary and idioms needed for communicating in a Spanish-speaking community. The course prepares students to move into a Spanish society with understanding and with a minimum of stress and discomfort.

Students planning to participate in Calvin's Study in Spain program are advised to register for this course. Examinations in both culture and language. *Mrs. E. Cortina.*

W51 Man, History, and Hope in Ernesto Sábato, César Vallejo, and Mario Vargas Llosa. Reading and analysis of three Latin American writers from a Christian perspective. The essays of Ernesto Sábato from Argentina, the novels of Mario Vargas Llosa from Peru, and the poetry of César Vallejo from Peru are studied with special reference to their views of man, history, and hope. The course is taught in Spanish. A research paper in Spanish is required. Satisfies departmental concentrations. Prerequisite: 218 or permission of the instructor. *Mr. S. Escobar.*

W52 Spanish Interim in Mexico. Students will spend four weeks in Mexico City living with Mexican families and studying at the Universidad Iberoamericana. Students will also hear lectures on selected topics in Mexican culture, spend three hours in class daily, and meet all regular course requirements. Visits to monuments, museums, and the pyramids in the area. Fee required. Prerequisites: 201 or its equivalent and permission of the instructor. Off-campus. *Mrs. S. Ariza.*

122 Intermediate Spanish. From the sequence 121-122-123 which covers the requirements for language. Spanish 122 should correspond to a whole semester of language. Prerequisite: 121 or its equivalent. *Mrs. Y. Byam, Miss M. Boelema, Miss S. Kallemyn.*



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- Master of Arts in Christian Studies Supervisory Committee*, H. Hoeks (1984, chairman), D. Diephouse (1986), R. Mouw (1985), W. Sanderson (1984), U. Zylstra (1985), P. De Vos.

Professional Programs Committee, G. Van Andel (1984, chairman), R. Albers (1985), J. Bosscher (1984), J. Cooke (1984), B. Klooster (1986), G. Schultze (1986), E. Van Vugt, G. Van Harn.

Social Research Center Governing Committee, D. Smalligan (1984, chairman), J. Brink (1984), P. De Jong (1984), P. Vande Guchte.

Teacher Education Committee, D. Topp (1985, chairman), H. Aay (1986), H. Baron (1985), P. De Boer (1986), S. Greydanus (1984), P. Lucasse (1984), G. Mellema (1984), C. Miller.

BUSINESS AFFAIRS COMMITTEES

College Store Committee, C. Bult (1984, chairman), D. Smalligan (1986), K. Johnson.

COLLEGE AFFAIRS COMMITTEES

College Relations Committee, C. Overvoorde (1986, chairman), T. Hofman (1984), C. Kaiser (1984), C. Menninga (1985), D. Distelberg, R. Eppinga, P. Harkema, T. Ozinga, P. Vande Guchte, one board member.

Priorities Committee, J. Beebe (1985, chairman), K. Konyndyk (1984), J. Penning (1986), F. Roberts (1984), S. Roels (1986), A. Diekema, P. De Vos, H. De Wit, B. Pekelder, P. Vande Guchte, P. Karsten, two board members.

Special Events Committee, B. Bosma (1984, co-chairman), S. Lambers (1985, co-chairman), M. Bakker (1986), D. Brink (1984), C. A. Danford (1986), D. De Young (1985), C. Huisman (1984), R. Jensen (1985), D. Rietberg (1984), R. Slager (1984), M. Vande Guchte (1986), N. Van Noord (1986).

CULTURAL AFFAIRS COORDINATING BOARD

Cultural Affairs Coordinating Council, J. Kuipers (1984, chairman), T. Hofman (1984), A. Otten (1985), M. A. Walters (1986), W. Stob (secretary).

Communications Board, D. De Boer (1984), E. Driesenga (1984), K. Kuiper (1984), R. Schreur (1984), J. Timmer (1984, secretary), W. Vande Kopple (1984), S. Van Der Weele (1984).

Film Arts Committee, D. Van Baak (1984, mentor), I. Kroese (1985), W. Stob (1985), R. Van Leeuwen (1986).

Fine Arts Guild, C. Van Nes (co-chairman), S. Van Eek (co-chairman).

Homecoming Committee, A. Jager (1984, chairman), R. Eppinga, G. De Blaey (1984), W. Stob.

Lectures Committee, G. Harper (1984, mentor).

FACULTY AFFAIRS COMMITTEES

Committee on Committees, A. Diekema (chairman), W. Bratt, T. Jager, H. Rienstra, H. Ten Harmsel, P. Tigchelaar.

Multicultural Lectureship Committee, L. Sweetman (1984, chairman), R. Broersma (1984), R. DeKock (1986), J. Dodge (1986), R. Otten (1985), Brent Wiersma (1984), R. Rice, one board member.

Professional Status Committee, A. Diekema, (chairman), W. Bratt (1985), J. De Borst (1984), C. Kass (1986), J. Primus (1986), C. Sinke (1984), P. De Vos.

STUDENT AFFAIRS COMMITTEES

All-Campus Discipline Committee, S. Stehouwer (1985, chairman), R. De Vries (1986), C. Hegewald (1984), C. Mulder (1985), M. Roobol (1984), R. Terborg (1986), R. Van Kalker (1984), D. Zuidema (1984), W. Stob (secretary), C. Orlebeke (alternate), A. Jager (alternate), D. Poolman (alternate).

Athletics Committee, B. De Vries (1984, chairman), R. Bolt (1986), A. Bratt (1985), H. Vroon (1984), K. Wolters (1984).

- Chapel Committee*, T. Anema (1984), J. De Jonge (1984), F. Guter (1984), E. Horchner (1984), A. Jager (1984), L. Vos (1984, chairman), S. Wiersma (1985), D. Cooper (secretary).
- Scholarships and Aids Committee*, D. Westra (1984, chairman), D. J. De Vries (1984), H. Holstege (1985), J. Scott (1984), G. Venema (1986), D. Young (1984), W. Hubers (secretary), D. Lautenbach, C. Miller.
- Student Conduct Committee*, A. Noteboom (1985, chairman), T. Anema (1984), P. De Jong (1985), C. Hamstra (1984), L. Stegink (1986), B. Ten Broek (1984), M. Van Dyk (1984), B. Pekelder (secretary).
- Student Life Committee*, C. Vos (1985, chairman), Ervina Boevé (1984), M. De Groot (1984), Jeff De Vries (1984), B. Houskamp (1984), J. White (1985), W. Stob (secretary), D. Cooper, T. Hoeksema, W. Boer.

AD HOC COMMITTEES

- Governing Board, Calvin Center for Christian Scholarship*, D. Ratzsch (1985, chairman), H. Brinks (1986), K. Piers (1985), G. Spykman (1986), N. H. Beversluis (1985), A. Diekema, P. De Vos, R. Rice, one board member, one alumnus.
- Governing Board, H. H. Meeter Center for Calvin Studies*, F. Roberts (1985, chairman), B. Armstrong (1984), D. Cooper (1986), J. De Korne (1984), R. Kingdon (1985), H. Zwaanstra (1985), F. Klooster (1986), J. De Jong, A. Diekema.

DEPARTMENT AND DIVISION ORGANIZATION AND CHAIRMEN

Division of Language, Literature, and Arts, Rodger Rice, *chairman*

- Art, Robin Jensen, *chairman*
- Classical Languages, George Harris, *chairman*
- Communication Arts and Sciences, David Holquist, *chairman*
- English, Kenneth Kuiper, *chairman*
- French, Barbara Carvill, *chairman*
- Germanic Languages, Cornelius Hegewald, *chairman*
- Music, Howard Slenk, *chairman*
- Spanish, Elsa Cortina, *chairman*

Division of Social Sciences, Rodger Rice, *chairman*

- Economics and Business, Kenneth Kuipers, *chairman*
- Physical Education, James Timmer, *chairman*
- Political Science, James De Borst, *chairman*
- Psychology, Roger Stouwie, *chairman*
- Sociology and Social Work, Donald Smalligan, *chairman*

Division of Natural Sciences and Mathematics, Gordon Van Harn, *chairman*

- Biology, Alan Gebben, *chairman*
- Chemistry, Kenneth Piers, *chairman*
- Engineering, James Bosscher, *chairman*
- Geology, Geography, and Environmental Studies, Clarence Menninga, *chairman*
- Mathematics and Computer Science, Carl Sinke, *chairman*
- Nursing, Cynthia Kielinen, *chairman*
- Physics, Roger Griffioen, *chairman*

Division of Contextual Disciplines, Gordon Van Harn, *chairman*

- Education, Philip Lucasse, *chairman*
- History, Bert De Vries, *chairman*
- Philosophy, Kenneth Konyndyk, *chairman*
- Religion and Theology, Willis De Boer, *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
- Theodford P. Dirkse, M.A., Ph.D.
Professor of Chemistry, Emeritus
- Bernard Jay Fridsma, Sr., M.A., Ph.D.
Professor of Germanic Languages, Emeritus
- Harold Paul Geerdes, M.Ed.
Associate Professor of Music, Emeritus
- 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
- Walter Lagerwey, M.A., Ph.D.
Professor of Germanic Languages, Emeritus
- Cornelius A. Plantinga, M.A., M.Ed., Ph.D.
Professor of Psychology, Emeritus
- William Thomas Radius, M.A., Ph.D.
Professor of Classical Languages, Emeritus
- H. Evan Runner, Th.B., Th.M., D.Phil.
Professor of Philosophy, Emeritus

William Spoelhof, M.A., Ph.D., LL.D., Litt.D., D.H.L.
President, Emeritus

Barney Steen, Ed.D.
Professor of Physical Education, Emeritus

Richard Robert Tiemersma, M.A., Ph.D.
Professor of English, Emeritus

John Johnson Timmerman, M.A., Ph.D.
Professor of English, Emeritus

John Vanden Berg, M.A., Ph.D.
Vice President for Academic Administration, Emeritus

Gertrude Vander Ark, M.A., Ed.S.
Assistant Professor of Education, Emerita

Helen Van Laar, M.A.
Assistant Professor of Education, Emerita

Enno Wolthuis, M.S., Ph.D.
Professor of Chemistry, Emeritus

G. Roderick Youngs, Th.B., M.A., Ed.D.
Professor of Psychology, Emeritus

Sydney T. Youngsma
Assistant to the President, Emeritus

Mildred Reitsema Zylstra, M.A.L.S.
Assistant Professor of English, Emerita

ACTIVE

Henry Aay, Ph.D. (Clark, 1978)
Associate Professor of Geography and Environmental Studies

Gerry Meninga Adams, M.A. (Stanford University, 1983)
Instructor in Mathematics

Robert J. Albers, Ph.D. (Connecticut, 1962)
Professor of Chemistry

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

James P. Bandstra, M.S. (Pittsburgh, 1977)
Visiting Associate Professor of Engineering

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 and Business

†Ronald Lee Blankespoor, Ph.D. (Iowa State, 1971)
Professor of Chemistry

Kathryn Blok, 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 Communication Arts and Sciences
- 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 Bonzelaar, 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)
Associate 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
- Conrad John Bult, M.A., M.A.L.S. (Michigan, 1962, 1965)
Assistant Library Director for College-Related Matters
- Linda Burden, B.S. (Western Michigan University, 1977), M.S.N. (Wayne State University, 1979)
Adjunct Instructor in Nursing
- Ynés M. Byam, M.A. (Michigan State University, 1977)
Assistant Professor of Spanish
- Barbara Carvill, Ph.D., (Toronto, 1981)
Associate Professor of Germanic Languages
Chairman of the Department of French
- Clifford G. Christians, B.D. (Calvin Theological Seminary, 1964), Th.M. (Fuller Theological Seminary, 1965), M.A. (University of Southern California, 1966), Ph.D. (Illinois, 1974)
Fellow, Calvin Center for Christian Scholarship
- James A. Clark, M.A., Ph.D. (Colorado, 1974, 1977)
Visiting Assistant Professor of Geology
- *Bradley Mellon Class, M.A. (Oregon, 1967), Ph.D. (New Mexico, 1974)**
Associate Professor of Spanish
- **Sandra Kay Clevenger, M.A. (Michigan State, 1974)**
Associate Professor of Spanish

- Dale Jay Cooper, B.D., M.T.S. (Calvin Theological Seminary, 1968, 1983)
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
- John D. Cox, M.A., Ph.D. (Chicago, 1968, 1975)
Visiting Associate Professor of English
- Gordon Lee De Blaey, 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
- 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)
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 and Business
- Cloe Ann Danford, M.S. (Colorado, 1975)
Assistant Professor of Nursing
- Mary M. Doornbos, M.S. (University of Michigan, 1983)
Instructor in Nursing

- Eugene Roy Dykema**, M.B.A. (Chicago, 1968)
Assistant Professor of Economics and Business
Fellow, Calvin Center for Christian Scholarship
- Johanna Duyst**, M.A.L.S. (Michigan, 1973)
Librarian
- Edward E. Ericson, Jr.**, M.A., Ph.D. (Arkansas, 1963, 1967)
Professor of English
- J. Samuel Escobar**, Profesor de Educación Secundaria (San Marcos University, 1966)
Multicultural Lecturer
- Catherine Gallouët-Schutter**, M.A., Ph.D. (Rutgers, 1974, 1982)
Visiting Assistant Professor of 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
- Stanley L. Haan**, Ph.D. (Colorado, 1983)
Assistant Professor of Physics
- John Edward Hamersma**, S.M.M., S.M.D. (Union Theological Seminary, New York, 1952, 1961)
Professor of Music
College Organist
- Lee P. Hardy**, M.A. (Duquesne, 1979), M.A., Ph.D. (Pittsburgh, 1980, 1982)
Assistant Professor of Philosophy
- George Graham Harper, Jr.**, M.A., Ph.D. (Northwestern, 1951, 1959)
Professor of English
- George Harris**, M.A. (Michigan, 1959), Ph.D. (Northwestern, 1971)
Professor of Classical Languages
Chairman of the Department of Classical Languages
Secretary of the Faculty
- Cornelius Peter Hegewald**, M.A., D.A.G. (Michigan State, 1964, 1967)
Associate Professor of Germanic Languages
Chairman of the Department of Germanic Languages
- William Cornelius Hendricks**, M.Ed. (Western Washington State, 1955)
Assistant Professor of Education
Coordinator of Elementary Education
- Paul K. Hesselink**, M.A., Ph.D. (Chicago, 1966, 1980)
Visiting Associate Professor of English
- Henry Jay Hoeks**, B.S.A.E. (Purdue, 1958), M.C.E. (Western Theological Seminary, 1966)
 Ed.D. (Columbia, 1975)
Professor of Religion and Theology
Director of the Academic Study of Religions Program
- †Robert James Hoeksema**, M.S.E. (Michigan, 1978)
Instructor in Engineering
- Thomas Brian Hoeksema**, M.A., Ph.D. (Michigan State, 1972, 1975)
Professor of Education
Coordinator of Special Education: Mentally Impaired
- Roland G. Hoksbergen**, M.A. (Notre Dame, 1981)
Instructor in Economics and Business

- James M. Hollebeek, M.A., M.A. (Western Michigan, 1974, 1976)
Counselor in the Broene Center
- David Jack Holquist, M.A. (Michigan, 1967), Ed.S. (Michigan State, 1974)
Associate Professor of Communication Arts and Sciences
Chairman of the Department of Communication Arts and Sciences
- Henry Holstege, Jr., M.A., Ph.D. (Michigan State, 1958, 1966)
Professor of Sociology
- Philip Cornelius Holtrop, B.D. (Calvin Theological Seminary, 1958)
Assistant Professor of Religion and Theology
- 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
- 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, B.A. (Calvin College, 1975), 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 Communication Arts and Sciences
- 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
- 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
- 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
Fellow, Calvin Center for Christian Scholarship
- 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
- Thomas J. Mansen, 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
- 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 Geology
Chairman of the Department of Geology, Geography, and Environmental Studies
- †Nancy L. Meyer, M.S. (Arizona, 1979)
Instructor in Physical Education
- Charles J. Miller, Ph.D. (Northwestern, 1947)
Dean for Academic Administration
- Daniel R. Miller, M.A., (North Carolina, 1975)
Visiting Instructor in History
- †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 and Business
- Marvin Eugene Monsma, M.A. (Michigan State, 1961), M.A.L.S. (Michigan, 1967)
Director of the Library
- †Stephen V. Monsma, M.A. (Georgetown, 1958), Ph.D. (Michigan State, 1965)
Fellow, Calvin Center for Christian Scholarship
- Ellen J. Moore, M.S.N. (Wayne State, 1979)
Visiting Assistant Professor of Nursing
- 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
- Pamela S. Naber, M.S. (Wisconsin, 1982)
Instructor in Physics
- Ann Janssen Noteboom, M.A., Ph.D. (Northwestern, 1952, 1957)
Professor of Communication Arts and Sciences
- Larry Ray Nyhoff, M.A. (Michigan, 1961), Ph.D. (Michigan State, 1969)
Professor of Computer Science
- Richard A. Nyhof, M.S., Ph.D. (Michigan State, 1976, 1981)
Assistant Professor of Biology
- 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
- 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
- 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
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