



Calvin College

The college of the Christian Reformed Church

The catalog for 1984-85

CONTENTS

	<i>The college year</i>	3
I	<i>The history of the college and its objectives</i>	5
II	<i>Student life and services</i>	11
III	<i>Admission and academic regulations</i>	17
IV	<i>Expenses and financial aid</i>	27
V	<i>The academic programs</i>	
	<i>Bachelor of Arts, Bachelor of Science</i>	43
	<i>Special academic programs</i>	47
	<i>Teacher education</i>	51
	<i>Other professional and preprofessional programs</i>	56
	<i>Bachelor of Fine Arts</i>	67
	<i>Bachelor of Science in Accountancy</i>	67
	<i>Bachelor of Science in Engineering</i>	68
	<i>Bachelor of Science in Nursing</i>	71
	<i>Master of Arts in Christian Studies</i>	73
	<i>Master of Arts in Teaching</i>	73
VI	<i>Departmental programs and courses</i>	77
VII	<i>The directories</i>	
	<i>The board of trustees</i>	193
	<i>The administration</i>	194
	<i>Faculty committees</i>	195
	<i>The faculty</i>	198
	<i>The index</i>	213
	<i>The campus map</i>	217

SEPTEMBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

OCTOBER						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

NOVEMBER						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

DECEMBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

JANUARY						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

FEBRUARY						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

MARCH						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

APRIL						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

MAY						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

JUNE						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

JULY						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

AUGUST						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

SEPTEMBER						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER						
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

DECEMBER						
S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

CALENDAR

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. Convocation 9:45-10:40 a.m.
NOVEMBER	7-8	Wednesday, Thursday	Reading recess and spring/interim advising
	9-20	Friday-Tuesday	Registration for interim and spring semester for all currently enrolled students
	19	Monday	Friday class schedule in effect
	20	Tuesday	Thursday class schedule in effect
	21	Wednesday	Thanksgiving recess 10:00 p.m.
	26	Monday	Classes resume 8:00 a.m.
DECEMBER	13	Thursday	Classes end 10:00 p.m.
	14	Friday	Reading recess
	15	Saturday	Examinations begin 9:00 a.m.
	20	Thursday	Examinations end 9:30 p.m. Christmas vacation begins

The Interim 1985

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

The Spring Semester 1985

FEBRUARY	4	Monday	Spring semester classes begin 8:00 a.m.
MARCH	29	Friday	Spring vacation begins 10:00 p.m.
APRIL	9	Tuesday	Spring vacation ends 8:00 a.m.
MAY	15	Wednesday	Reading Recess
	16	Thursday	Examinations begin 9:00 a.m.
	22	Wednesday	Examinations end 4:30 p.m.
	25	Saturday	Commencement 3:00 p.m.

The Summer Sessions 1985

MAY	28	Tuesday	First session begins 8:30 a.m.
JUNE	19	Wednesday	First session ends
JUNE	27	Thursday	Second session begins 8:30 a.m.
JULY	4	Thursday	No classes
	22	Monday	Second session ends
	23	Tuesday	Third session begins 8:30 a.m.
AUGUST	14	Wednesday	Third session ends

The Fall Semester 1985

SEPTEMBER	3	Tuesday	Faculty conference
	4	Wednesday	Residence halls open
	5-7	Thursday-Saturday	Orientation and registration
	9	Monday	First semester classes begin 8:00 a.m.



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

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

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

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

Government

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

Compliance with Legal Requirements

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

Accreditation and Affiliation

Calvin College is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools. It is also accredited by the American Chemical Society. It is on the American Association of University Women list of institutions qualified for membership in the association. It maintains membership in the American Council on Education, the Association of American Colleges, American Association of Colleges for Teacher Education, College Entrance Examination Board, National Education Association, the Mathematical Association of America, the Michigan Academy of Sciences, Arts, and Letters, and the American Mathematical Society. It is a member of the Christian College Coalition.

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 inter-

im, 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.

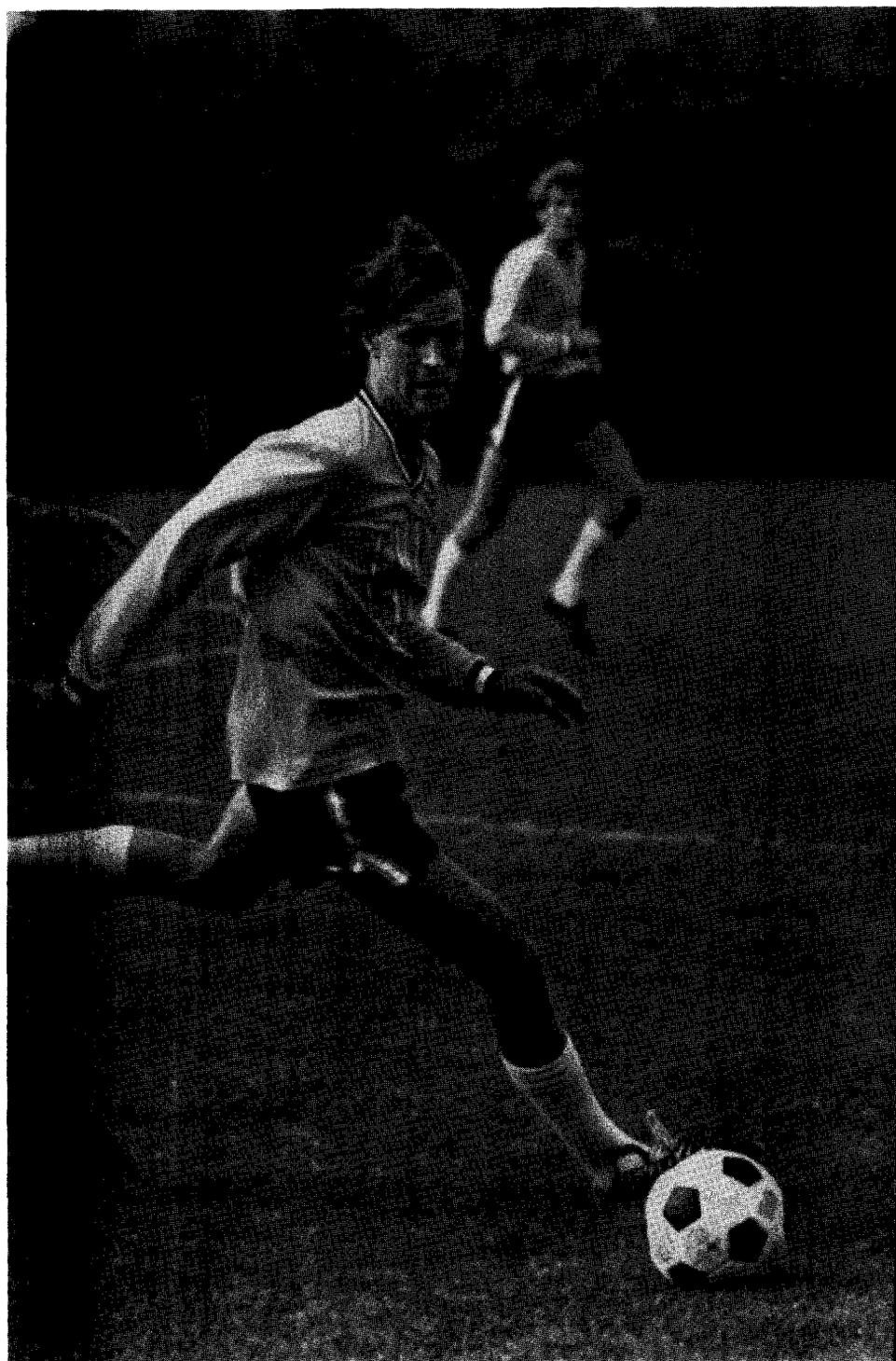
The Calvin Alumni Association

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 more than thirty-four 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. 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 Miss 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 any student with a problem. 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

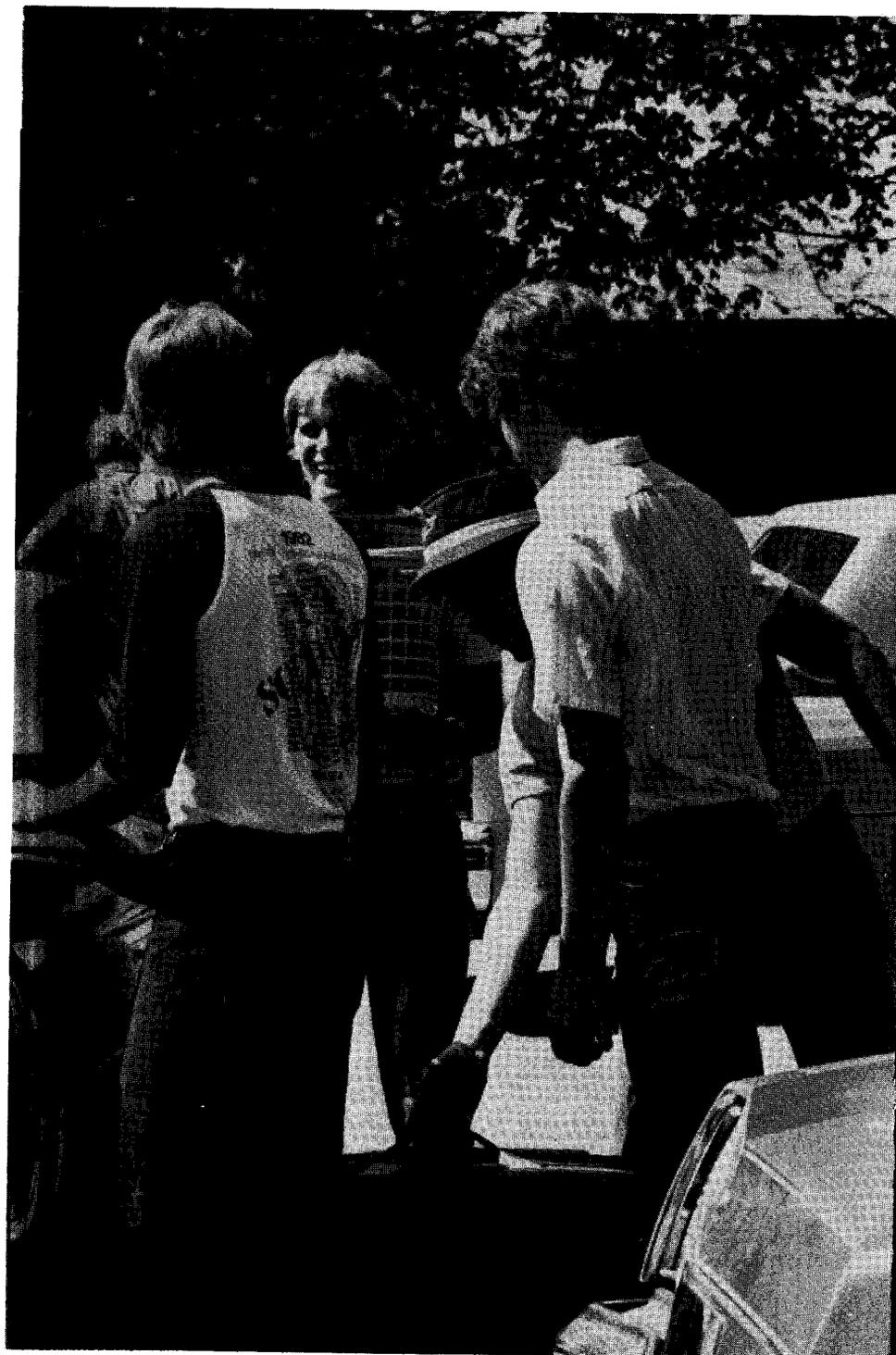
The college maintains a series of services for graduating students to assist them in securing fellowships to graduate school, teaching positions, and career placement.

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.

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



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 perspective and curriculum at Calvin and show an interest in its aims are eligible for admission. Although the prospect of academic success is of primary consideration, the applicant's aspirations, the recommendations of his pastor or a school official, and the particular ability of Calvin to be of service to him will be considered. The college admits students of any race, color, and national or ethnic origin.

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

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

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

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

Applicants with high school averages of C+ (2.3) or higher in their college preparatory courses whose ACT-Composite is 16 or higher or whose SAT-Verbal is above 370 and SAT-Mathematics above 390 are normally given regular admission. Applicants with lower grades and scores and with deficiencies in their high school preparation are reviewed individually to find evidence of the ability to do satisfactory college work. Such applicants are admitted under special conditions. This program is described on page 82.

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 6-10 and 13-17, 1985.*
2. *A satisfactory score on any of the Subject Examinations of the College-Level Examination Program (CLEP) of the College Entrance Examination Board. These tests are administered usually during the third week of each month.*
3. *The passing of special departmental examinations at Calvin College.*

Furthermore, students who have completed appropriate courses in high school are excused from certain college graduation requirements. This is most common in foreign language, mathematics, literature, and the sciences. Consult pages 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 other tests are not available. Candidates for entrance examinations must apply for them at least a month prior to the testing dates.

The American College Test is normally given five times a year throughout the world. Application forms are generally available from high school principals and counselors but may be requested from the American College Testing Program, Box 168, Iowa City, Iowa 52240. This test is required by the State of Michigan for its competitive scholarship program. Testing dates for the 1984-85 academic year are October 27, December 8, February 9, April 20, and June 8.

Applicants not able to sit for the ACT may submit Scholastic Aptitude Test results. Subsequently they will be required to take the ACT on campus at the expense of the college. The Scholastic Aptitude Test will be given this academic year on October 13 (Illinois only), November 3, December 1, January 26, March May 4, and June 1. Application forms are generally available from high school principals and counselors but may be secured by students living east of the Rocky Mountains from the College Entrance Examination Board, Box 592, Princeton, New Jersey 08540. Those who live in the Rocky Mountain states or farther west, including those from Western Canada and foreign countries of the Pacific areas, should apply to the College Entrance Examination Board, Box 1025, Berkeley, California 94701.

Although low test scores are seldom used to bar admission to students who demonstrate a desire for a college education, average scores have remained steady in recent years. In 1983 the average high school grade was B (3.10); the average SAT-V was 489 and the SAT-M was 530; and the average ACT-E was 21.4, the average ACT-M was 23.1, and the Composite, 23.1.

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.

Transfer applicants who have been admitted must make a deposit by June 2 which will be refunded if requested before July 1.

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

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

MODEL HIGH SCHOOL PROGRAM

High school students should recognize that the quality of their high school education will determine the ease with which they will do college work and their ability to follow certain courses of study. At Calvin the nature and quality of a student's high school preparation may reduce his college graduation requirements (See pages 43-47).

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

Admission Under Special Conditions

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

Applicants who are at least nineteen years of age but have not completed high school or its equivalent may be admitted on probation provided they have successfully completed the General Educational Development Test and submit satisfactory scores on one of the freshman entrance examinations.

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

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

Admission of International Students

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

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

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

Admission to Nursing Programs

Students wishing to become nurses through Calvin may follow either a program that will qualify them to enter the Hope-Calvin nursing program or

complete a program that will enable them to transfer to a degree program in a different school. The three-year diploma program in nursing through the Blodgett Memorial Medical Center is being terminated by the Center with the class beginning in September, 1984.

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

Visitors and Auditors

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

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

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 requirements.

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

Grading Systems

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

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

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

Auditors are 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 48 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 four courses, one of which must be an Academic Support course, 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 is placed on academic probation if his GPA falls below 2.0 and must within the next two semesters raise it to 2.0 in order to continue to be certified for such benefits. Such students must, prior to enrolling for the final four course units, have earned a cumulative grade point average of 2.0. If any student receiving veteran's benefits fails to come off probation within the prescribed probation period, the school will inform the Veteran's Administration. That student will be informed in writing that the Veteran's Administration has been notified, and the Veteran's Administration will terminate his benefits.

Any student whose average falls below the minimum required for continuation is subject to dismissal. All students permitted to continue but not meeting the requirements for good standing are placed on probation. Freshmen placed on

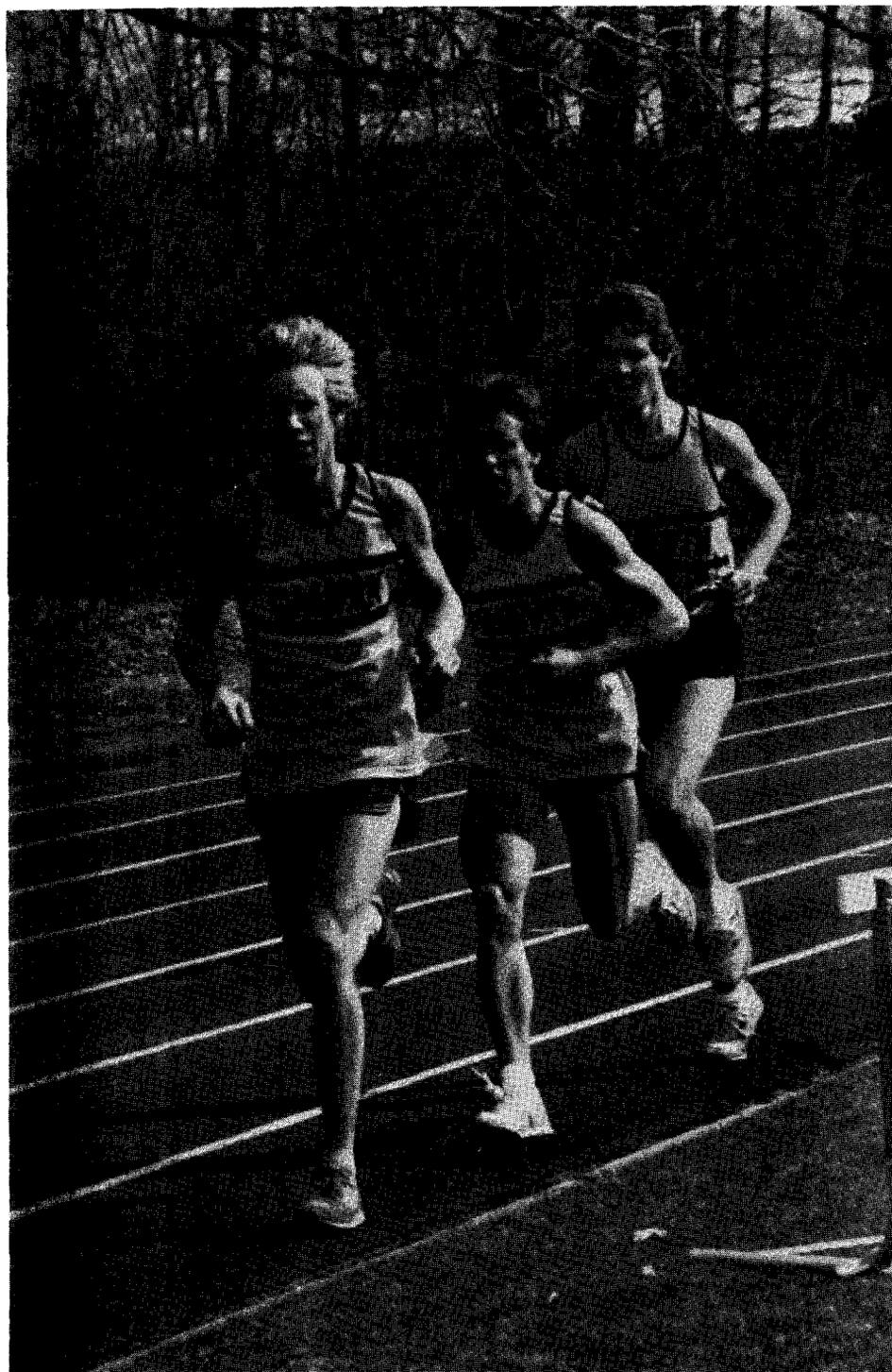
probation are limited to four courses, one of which is an Academic Support course, and required to participate in the Academic Support Program. All students on probation are expected to limit extracurricular activities and part-time employment and to seek help in developing their academic skills either from a faculty adviser or from the staff of the Academic Support Program and must raise their grade point averages above those of the previous semester.

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 43, 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 48 for details.



EXPENSES

Tuition and fees

TUITION FOR THE ACADEMIC YEAR is \$4,620; room and board on campus is \$2,100; 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	\$2,310
Tuition, per course-unit rate	620
Tuition, auditing, per course unit	310
Tuition, clinical years, B.S. in Nursing	5,756
Room and board, academic year	2,100

DEPOSITS

Housing deposit	50
Physical education locker deposit	5

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

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.	270
Half hour weekly lesson per sem.	135
For concentrates, per sem.	200
Vehicle registration fee	10
Residence hall social fee	20
Transcript, after first one	1

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 \$1,420 for tuition, room, and board; the minimum for non-resident students paying tuition only is \$1,050. 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.

Scholarships and Financial Aid

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

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

The Office of Scholarships and Financial Aid assists students in working out programs to cover 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 Schol-

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

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

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 1984-85, grants are expected to be \$400 per year for full-time students, and \$200 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 1984-85 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-state 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

Scholarships are awarded to incoming students to encourage good students who are likely to do superior work to enroll at Calvin and to upperclassmen to encourage superior academic performance. Most scholarships are granted on the basis of the student's academic record and potential, but in some cases other factors such as program of study, financial need, and other designated criteria are taken into consideration. More than 250 scholarships are awarded annually to freshmen and approximately 300 to upperclassmen. Descriptions of specific scholarships are given beginning on page 28. Students eligible for more than one scholarship are granted the largest scholarship for which they qualify.

Scholarships for Freshmen. Most scholarships for freshmen in 1984–1985 range from \$400–\$2,000. All freshmen are considered for scholarships at the time of admission—no separate scholarship application is required. Scholarship review begins in December, and students who are selected to receive a scholarship are notified soon afterwards. Students who wish to be considered for a Calvin National Merit Scholarship, a Presidential Scholarship, a Faculty Honors Scholarship, or one of the named scholarships must be admitted by February 1, and must arrange to have their ACT or SAT scores reported to the college by that date. The following scholarships are available to freshmen.

General Scholarships

Calvin National Merit Scholarships. Each year Calvin sponsors up to twelve scholarships for freshmen who are National Merit finalists. These scholarships provide a minimum award of \$1,050 per year and are renewable for up to four years of undergraduate study. Additional amounts, up to a total of \$2,000 per year, are available based on need. The scholarships also provide an allowance of \$50 for books other than textbooks for the freshman year. Prospective students who indicate to the National Merit Corporation that Calvin College is their first choice institution are considered for this award.

Presidential Scholarships. Scholarships of \$1,050 each (\$1,150 in 1984–86) are awarded to the top forty or fifty incoming freshmen who are not selected to receive a Calvin National Merit Scholarship. Selection is based on high school grades, class rank, and ACT or SAT scores. These scholarships also provide an allowance of \$50 for books other than textbooks.

Faculty Honors Scholarships. Approximately eighty or ninety scholarships are awarded each year to students who demonstrate outstanding academic achievement and potential but are not selected to receive a Presidential Scholarship. Students who

are valedictorians of their high school class receive this scholarship automatically, if they have a grade point average of 3.5 or higher. National Merit Semifinalists receive this scholarship automatically if they are not selected for a Calvin National Merit Scholarship. Others are selected on the basis of high school grades, class rank, and ACT or SAT scores. The scholarship amount is \$800 for 1984–85 and \$900 for 1985–86.

Honors Scholarships. Scholarships of \$400 (\$450 1985–86) are awarded to students in approximately the top 25 percent of the incoming freshman class who are not selected to receive one of the above scholarships or one of the named scholarships described below. These scholarships are also based on an evaluation of high school grades, class rank, and ACT or SAT scores. Normally, a grade point average of 3.5 or better is required for consideration.

Named Scholarships

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

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

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

requirement for the scholarship. Returning students are considered as well as incoming freshmen.

Woodlawn Christian Reformed Church Minority Scholarship. Each year the Woodlawn Christian Reformed Church of Grand Rapids, Michigan, provides the college with up to \$2,500 to be awarded to a North American student of a minority culture who is personally committed to Jesus Christ and His Church. The amount of the scholarship, which can range from \$1,000 to \$2,500, depends on the amount of the student's need and the availability of other aid. A minimum grade point average of 2.5 is required. Returning students are considered as well as incoming freshmen.

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

Grants. The Christian Reformed Church has authorized the synodical Committee on Race Relations (SCORR) to provide grants of up to \$1,000 per year to North American students of minority cultures who are related to the Christian Reformed Church. Selection criteria include the student's academic record, financial need, and interest in serving God's Kingdom through the Christian Reformed Church. Returning students are considered as well as incoming freshmen.

Music Awards

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

applying for the Oratorio Society and Vander Heide awards is April 10. Application blanks and additional information are available from the Music Department. Awards are announced by the end of April.

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

and musicianship. See Oratorio Scholarship above for application procedure.

Freshman Keyboard Scholarship. 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.

Scholarships for Transfer Students

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

Faculty Honors Scholarship. Scholarships of \$800 are awarded to transfer students who have a grade point average of 3.75 or higher in their previous college work. The amount of the scholarship will be increased to \$900 for 1985-86.

Honors Scholarship. Scholarships of \$400 (\$450 for 1985-86) are awarded to transfer students who have a grade point average between 3.50 and 3.74 in their previous college work.

Scholarships for Sophomores, Juniors, and Seniors

A variety of scholarships are available for upperclassmen. This includes many named scholarships funded by donors as well as Honors, Faculty Honors, and Presidential Scholarships funded by the college. Honors Scholarships and Faculty Honors Scholarships are awarded automatically to those who have the required grade point average as described below. Students who have less than a 3.50 grade point average and want to be considered for a scholarship and those who have a 3.50 grade point average or higher and want to be considered for a better scholarship must complete a scholarship or application form. These are available from the Office of Scholarships and Financial Aid and must be filed by March 1. Students who are eligible for more than one scholarship are granted the largest scholarship for which they qualify. The following scholarships are available.

General Scholarships

Presidential Scholarships. Scholarships of \$1,050 each are awarded to approximately 15 or 20 top students at each class level. Selection is based on a review of the student's academic record at Calvin and the

recommendations received from faculty members. A grade point average of 3.80 or higher is required for consideration. The amount of the scholarship will be increased to \$1,150 for 1985-86.

Faculty Honors Scholarships. Scholarships of \$800 are awarded to all students who have a cumulative grade point average of 3.75 or higher at the end of first semester if they are not selected to receive a Presidential or larger scholarship. The amount of the scholarship will be increased to \$900 for 1985-1986.

Honors Scholarships. Scholarships for \$400(450 for 1985-86) are awarded to all students who have a cumulative grade point average between 3.50 and 3.74 if they are not selected to receive another larger scholarship awarded by the college.

Named Scholarships

Calvin Alumni Association Scholarships. The Calvin Alumni Association awards nine scholarships of \$1,200 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.

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 1985-86, 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. (\$600 was awarded in 1984-85.) The scholarship is awarded to a pre-law student entering the junior or senior year, with primary empha-

sis on an evaluation of academic performance, and potential need is a secondary factor in the selection.

Dr. John W. Brink Memorial Scholarship. One scholarship of \$300 or more is awarded each year (\$500 was awarded in 1984-85) in memory of Dr. John W. Brink to a pre-medical 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 scholarships of \$500 or more are awarded each year by the Scholarship Committee of the college on the basis of diligence, character, commitment to service of the Lord and mankind, promise of growth, and, in some cases, financial need. 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 top scholarship 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. The amount of the scholarship for 1985-86 will be \$1,200.

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

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. Two scholarships of \$950 each were awarded for 1984-85. Selection criteria include vocational interest, academic record, character, and need.

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 recipient; however, an academic record of C+ or better is also required.

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

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

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

Grand Rapids Foundation Scholarships. As a result of a bequest by the late Stephen D. Lankester to the Grand Rapids Foundation, seven 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 1985-86 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. 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 1984-85, three scholarships were awarded ranging from \$900 to \$1100. 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 \$2,500 to be awarded to a North American student of a minority culture who is personally committed to Jesus Christ and His Church. The amount of the scholarship which can range from \$1,000 to \$2,000, depends on the amount of a student's need and the availability of other aid. A minimum grade point average of 2.50 is required. Incoming freshmen are considered as well as returning students.

Ruth Zylstra Memorial Scholarship. Each year Calvin College awards one scholarship of \$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.

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

Edward C. and Hazel L. Stephenson Foundation Scholarship. Each year Calvin receives a gift of \$3,000 from this foundation to be used for scholarships. For 1984-1985, five scholarships were awarded in amounts of \$600 each.

George J. Van Wesep Scholarship. Each year Mr. & Mrs. Richard De Vos of Ada, Michigan, provide Calvin with a gift of \$5,000 to be used for scholarships. The gift is given in recognition of Mrs. De Vos' father, Mr. George J. Van Wesep, who was a teacher/administrator in the public and Christian schools for more than fifty years. Because of Mr. Van Wesep's commitment to education, and to Christian education in particular, the scholarships are awarded to students planning to pursue education as a career. Scholarships are awarded to juniors and seniors primarily on the basis of the student's academic record and potential for Christian service in education. Financial need is considered as a secondary factor. For 1984-85, five scholarships were awarded of \$1,000 each.

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

chemistry. The scholarship will be awarded primarily on the basis of the student's academic record with financial need as a secondary consideration.

Charles and Anna Wabeke Memorial Scholarship. Calvin has received a gift from Mrs. Ruth Heerspink, daughter of Mr. and Mrs. Wabeke, which has been used to establish a scholarship fund. Scholarships are awarded to upperclassmen who are planning to enter full-time Kingdom service with preference given to those interested in missions. The student's academic record and faculty recommendations are primary factors in the selection (a grade point average of 3.0 or better is required) although financial need is considered as well. For 1984-85, one scholarship of \$500 was awarded.

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

SCORR Grants. The Christian Reformed Church has authorized the Synodical committee on Race Relations (SCORR) to provide grants of up to \$1,000 per year to North American students of minority cultures who are related to the Christian Reformed Church. The purpose of the program is to encourage the development of multi-racial leadership in the Christian Reformed Church. Selection criteria include the student's academic record, financial need, and interest in serving God's Kingdom through the Christian Reformed Church. Incoming freshmen are considered as well as returning students.

Music Awards

The Cayvan Award in Strings. An annual award of \$500 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 an annual award of \$500 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 \$500 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 Award. An annual award of \$500 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.

The Upperclassman Keyboard Award. An annual award of \$500 is offered to an outstanding sophomore or junior pianist or organist to be used toward the cost of individual lessons in applied music during the junior or senior year. Applicants will be judged on the basis of proficiency in performance at the keyboard, evidence of sound overall musicianship, and grade point average, especially in music.

Scholarships for Graduate Students

Graduate students enrolled in the Master of Arts in Teaching or Master of Arts in Christian Studies programs are eligible for scholarships similar to the Presidential, Faculty Honors, and Honors Scholarships for undergraduates. Students currently enrolled at Calvin who want to be considered for a scholarship for the following year are required to file a scholarship application form. New students in master's degree programs are considered on the basis of their academic record at the time of admission. No separate scholarship application is required. New students must be admitted by March 1 to receive maximum consideration.

NEED-BASED FINANCIAL AID

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

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

Calvin College. This brochure is available from the Office of Scholarships and Financial Aid.

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

Michigan Competitive Scholarships and Tuition Grants. The State of Michigan provides awards of up to \$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 1984-85, grants are expected to be \$500 per year for full-time students and \$200 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 \$1,900 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 under-

graduate 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 1984-85 is \$3,200.

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.

OTHER STUDENT AWARDS

Anna Bruinsma Award in Music. The interest on \$750, given by the late H. J. Bruinsma of Grand Rapids in honor of his deceased wife, one of Calvin's alumnae, is

to be used in the Department of Music, two-thirds of it serving as first, and the remaining third, as second prize. These awards to seniors are granted for the student's contribution to musical life on campus and academic achievement.

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

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

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

Ervina Boevé Scholarship for Theater Arts. Through the generosity of former students and friends this scholarship honors Mrs. Ervina Boevé for her contribution to the theater and the college while serving as Director of Thespians. Each year a scholarship of

\$150, to be applied toward tuition, will be awarded by the Department of Communication Arts and Sciences to a junior speech major with a theater arts concentration on the basis of academic record and proven ability and dedication in performance, production, or scholarly research in theater. Applicants for the scholarship must submit an application portfolio to the department by April 1.

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

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

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

also such qualities as an interest in humane letters and a Christian concern for cultural and spiritual growth through literature. The English Department selects the person to receive the award.

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

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

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 widow of Professor O. K. Bouwsma and other benefactors, an annual prize of \$100 will be awarded to one upperclass student for dis-

tinguished achievement in philosophy and promise of future contribution to Christian scholarship. The Philosophy Department selects the recipient on the basis of submitted papers.

The Rinck Memorial Award. A fund has been established by former students and friends as a memorial to William Rinck, professor of mathematics at Calvin College from 1905 to 1920. The income of this fund is devoted to an award for outstanding work in mathematics. The prize is awarded annually to the senior student majoring in mathematics who has, in the opinion of the Department of Mathematics and Computer Science, done superior work in undergraduate mathematics.

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

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

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

American Production and Inventory Control Society Award. A \$100 scholarship is

awarded annually to a student who has exhibited academic excellence and has expressed a sincere interest in pursuing an education in the field of production and inventory control. The recipient is selected by the Department of Economics and Business.

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

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

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.

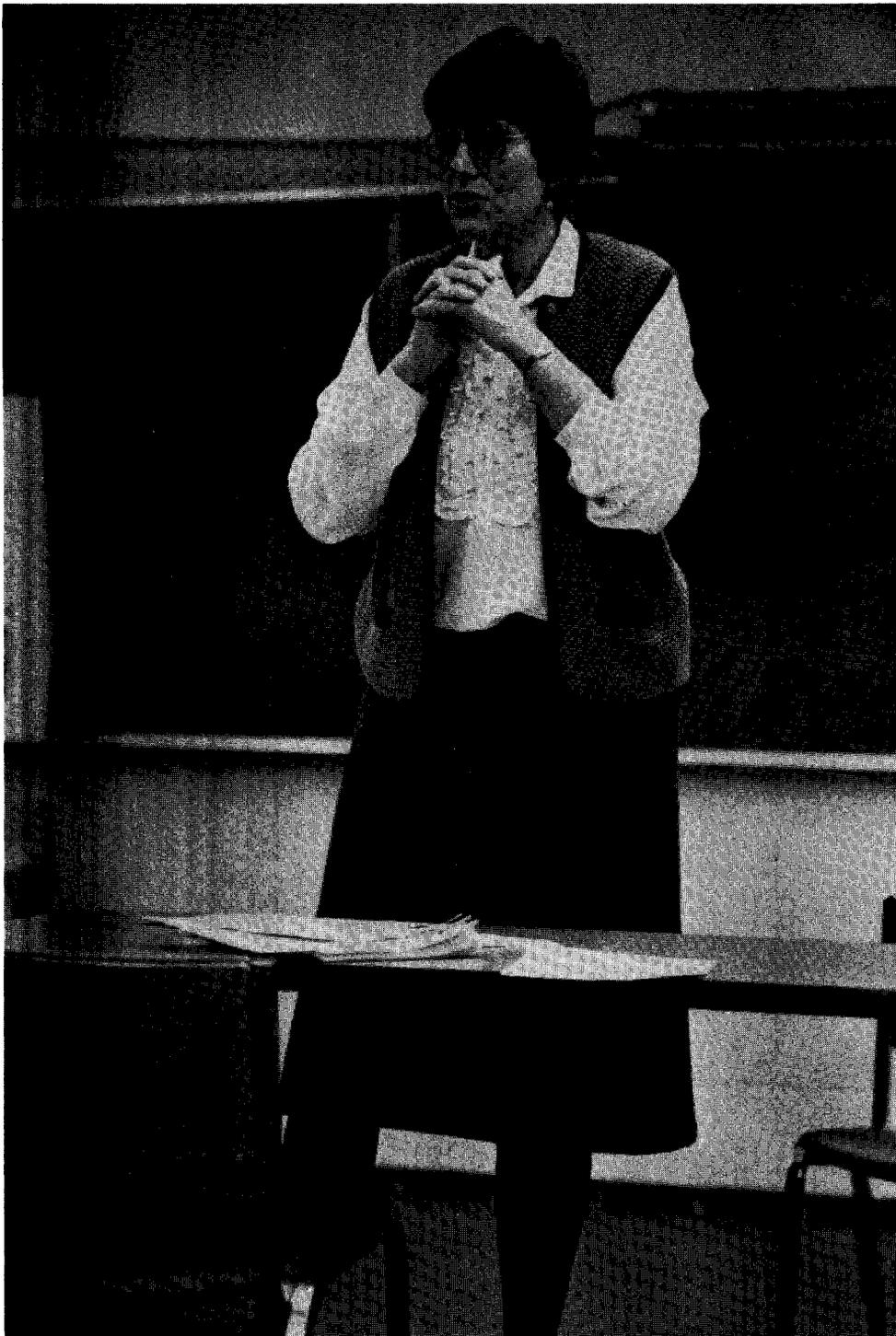
The Lauren Wondergem Memorial Scholarship. The Board of the Hearing and Speech Center of Grand Rapids presents, in memory of Lauren Wondergem, a Calvin graduate who served as the Center's Executive Vice-President from 1962-1982, an annual scholarship of \$250 to a student intending to enter the field 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. Mr. Charles Miller is the campus representative for Fulbright, Rhodes, Marshall, and similar fellowships.



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 communication disorders, engineering, forestry, medical technology, natural science, and special education.

Bachelor of Arts, Bachelor of Science Degrees

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

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

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

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

I. THE LIBERAL ARTS CORE

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

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

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

- ① One course in history from 101 and 102.
- ② One course in philosophy from 151, 153, 251, and 252.
- ③ One course in biblical studies from Religion 103, 108, 207, 208, 327, and 328.
- ④ One course in historical and theological studies from Religion 206, 301, 303, 304, 308, 311, and 312.
- ⑤⑥ 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

- ① One course in mathematics from 100, 121, which is recommended in elementary teacher education programs, 131, and 161.
- ② One course in physical science from Chemistry 110, Physics 110, 112, which is required in elementary education programs, Astronomy 110, and Geology 103.
- ③ One course in biology from 111, 215, 216, 217, or 131, which is required in pre dental and

Chem 100 + Chem 102 = Chem 100

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

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

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

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

High School Exempt

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

① One course in economics or political science from Economics 151, 221, Political Science 151, 201, 202, 203, and 210; Political Science 201 or 210 is recommended for elementary teacher education programs.

② 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

① One course in literature taught in English from courses numbered 200 through 321. English 260, 325, and 326 do not meet this requirement.

② One course in the other fine arts or in literature taught in a foreign language. These may be from Art 151, 231, 232, 332, 335, 338, 340, Classics 221, 231, Music 103, 133, 231, 232, 233, 234, 236, 238, 241, Communication 203, 217, 253, 304, 317, 318, 325, or foreign literature courses. Art 215 and Music 238 are acceptable only in elementary teacher education programs.

③ A third course from either of these groups or English 325 or 326. Students who have completed, with minimum grades of C, four units of high school English (excluding speech) or those who have completed in grades 11 and 12 either one and one-half units of literature (excluding composition, creative writing, journalism, film, and mythology) or one unit of art history or music appreciation are excused from this requirement.

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

① A course in written rhetoric, English 100, or the passing of a competency examination.

② 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.

③ 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 may not take more than two interim courses in a single department.

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

III. PROGRAMS OF CONCENTRATION (MAJORS AND MINORS)

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

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

The various programs of concentration are specified in the section of the catalog which describes departmental programs and course offerings, beginning on page 77. Group majors designed for teacher certification programs are described in the section on Teacher Education Programs, on pages 51 and following. Students may also initiate interdisciplinary programs of concentration other than those formally approved by the faculty. Requirements for developing such interdisciplinary programs are available from the registrar's office. Such programs require the approval of the departmental chairmen concerned as well as of the registrar.

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

Special academic programs

Course Credit and Exemption Examinations

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

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

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

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

The Honors Programs

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

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

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

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

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

The Academic Support Program

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

Special intensive classes are offered in English rhetoric and English as a second language for students who need systematic review of language skills, and mathematics review courses are available to liberal arts students as well as science students who have limited preparation in mathematics. Course descriptions can be found on page 77.

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, assistant to the provost.

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 Program

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

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

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

Programs for teacher education and other professions

Teacher Education Programs

Students wishing to become teachers must meet certain conditions before they can be admitted to the program and must maintain specified standards to remain in the program and be recommended for certification.

Before taking any courses in the department, students must apply for admission to the teacher education program at the Department of Education. To be eligible they must have completed at least nine course units with a minimum cumulative grade point average of C (2.0), must have completed at least twenty-five hours of supervised experience with school-aged people, and must have met minimum competency-test standards in English, mathematics, and reading. Ordinarily students apply for admission at the end of their sophomore year, but those needing to complete 301-303 during the second semester of their sophomore year must apply during the previous semester. Those in the combined Calvin/Grand Valley special education program are required to have a C+ (2.3) cumulative grade point average. Once admitted students must work out an appropriate counseling sheet with an adviser.

To remain in the teacher education program a student must complete Education 301-303 (and 215, if in special education) with a minimum grade of C and receive the positive recommendation of the instructors. They must maintain an average of C (or C+, if in the Calvin/Grand Valley program), in their declared major, minor, education courses, and overall. Prior to admission to their directed teaching a student must also have completed twenty-five course units including at least six in his major and must have the approval of the major adviser and of the Department of Education. Students normally should apply for their directed teaching assignment by March 1 prior to the academic year in which they expect to student teach.

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

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

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

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

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

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

Graduates who have earned a Michigan Provisional Certificate since July, 1970, must complete a 5.2 course unit (18 sem. hrs.) planned program or enroll in a master's degree program to qualify for a Continuing Certificate. The Master of Arts in Teaching program at Calvin can be used not only to satisfy the requirements for continuing certification but also to develop additional areas for certification 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 43-47 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, German, Latin, Spanish), history, mathematics, physical education, political science, and speech; a ten and a half course concentration from art and music.

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

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

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

General Science Studies Group Major. The five required courses for any concentration in this group are: Biology 111, 131, 215, or 217; Chemistry 110, 113, or 103; Environmental Science 201 or 202; Geology 100, 103, 105, or 151; and Physics 112 or 113. In addition a student must complete one five-course and one three-course sequence listed below. The recommended five-course sequence in biology is 131 or 111; 201 or 217; 202 or 215; 216 or 430S; and one elective. In chemistry, 103-104 and three electives. In earth science, Geology 100; 105 or 151; Astronomy 110 or 201; Environmental Science 202; and one elective. In environmental science, 201, 202, and 395; Geology 100; and one course from Biology 216, Geology 103, Chemistry 103, 111, and 113. In geology, 103, 105, or 151; 152; 212; and two approved electives. In health science, Biology 105, 106, 107, and interim

courses in health and nutrition. In physics, 123, 124, 181, 183, 225, 226, and one elective. In the physical sciences, Astronomy 110; Chemistry 103, 110, or 113; Geology 100, 103, 105, or 151; Physics 112; and one elective. The recommended three-course sequence in biology is made of any three courses listed for the five-course sequence. In chemistry, 103-104 or 113-114 and one elective. In environmental science, 201, 202, and Biology 216 or Geology 100. In geology, 103, 105, or 151; 152; and 212 or 311. In health sciences, Biology 107, 215, and an interim course in health or nutrition. In physics, 123, 124, 181, 182, and one elective; or 221, 222, and one elective. The adviser for these programs is Mr. Clarence Menninga of the Department of Geology.

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

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

Secondary education. The minimum secondary program requires the completion of the general graduation requirements (see pages 43-47 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, economics, English, French, German, history, Latin, mathematics, music, physical education, physics, political science, Spanish, and speech. Majors in art and music require ten and a half courses. The minor should be selected from these subject areas or from geography, psychology, religion and theology (the academic study of religions), and sociology. 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, geography, history, and political science). Group minors of seven courses with the minimum of three in one subject may be chosen from the same areas 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 programs are: 301, 303, 304, 307, 308, 346, and 356.

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

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

In addition, Calvin College offers a Master of Arts in Teaching degree in learning disabilities. Part of the program leads to certification as a teacher of the

learning disabled. Applicants must possess an elementary or secondary teaching certificate and must have completed coursework in the education or psychology of exceptional children and in child or adolescent psychology. Two years of regular teaching experience are recommended. Students in this program complete two courses in the context of education, four and one-half courses in the learning disability concentration, two electives, and a project. Practicum experience is included. A non-degree 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. They may also complete a Bachelor of Science in Accountancy degree. This degree program is described on page 67. Students preparing to sit for Certified Public Accounting (C.P.A.) examinations in any state should consult the Department of Economics and Business.

Agriculture

Although Calvin College does not offer a degree in agriculture, Calvin does offer basic courses which can be applied towards a degree at agriculture colleges such as those at Michigan State University, the University of Guelph, or Dordt College. Calvin offers an introductory course in crop science. Next year a course in soil science will be introduced. 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, 230; 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, 230; 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, 230; Chemistry 103, 104; Economics 151, 207, 318; English 100 plus a course in English literature; one fine arts course; one foreign language course at the 200-level; History 101 plus an additional history course; Philosophy 153; one course in political science, psychology, or sociology; and one course in religion and theology.

Architecture

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

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

Business Administration

Balanced preparation for a business career is provided by meeting the general degree requirements (page 43–47) 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 core	1
English 100	1
History 101 or 102	1
Foreign language	2
Mathematics 131, 132, or alternate mathematics cognate	2
Physical education	½
Religion and theology core	1
 <i>Second year</i>	 COURSES
Art, music, or speech core	1
Biological science	1
Business 201, 202	2
Economics, 221, 222	2
Philosophy 151–152 or 153	1–2
Physical education	½
Communication 100 or 240	½
Elective	2

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

Communication Disorders

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

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

The Liberal Arts requirements are: one core course each in history, philosophy, and religion with an additional course from one of the departments; Biology 105 and 106 or equivalent courses; Physics 223; Mathematics 131; Psychology 151 and 204; a core course in either economics or political science; a core course in literature plus an additional course in literature, fine arts, or foreign culture; English 100 and 319; and a half course of credit in basic physical education.

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

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

Engineering

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

and Engineering from Calvin if they have completed twenty-seven course units at Calvin, including certain designated courses.

The chairman of the Department of Engineering is Dr. James Bosscher. The programs are described on page 68.

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 core 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 should meet the pre-forestry requirements of that program. Because of developing changes in the University of Michigan program, students should consult the Calvin adviser of the program when registering. 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 43. The prelaw 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. Prelaw students should declare they are prelaw at registration time and are advised to consult the prelaw adviser before or during each semester's registration. Juniors and seniors, whatever their field of major concentration, should choose their electives with care and in consultation with the prelaw adviser.

Medicine and Dentistry

All students planning to enter the premedical or pre dental programs should consult Mr. Peter Tigchelaar of the Department of Biology, faculty adviser of the premedical and pre dental programs. Students should also note the general college admission requirements on page 19.

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, 321, 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.

Students should apply to accredited schools of medical technology during the fall semester of their junior year. Calvin College is affiliated with the schools of Medical Technology at Blodgett Memorial Medical Center, Butterworth Hospital, and Saint Mary's Hospital, all of which are in Grand Rapids, and with West

Suburban Hospital in Oak Park, Illinois. Students may do their clinical internship at these or other approved institutions to which they are admitted.

A typical student program is as follows:

<i>First year</i>	COURSES
Biology 131, 205	2
Chemistry 103, 104	2
English 100	1
Foreign language (See paragraph above)	2
History 101 or 102	1
Interim	1
Physical education	½
<i>Second year</i>	COURSES
Biology 206, 264, 334	2
Chemistry 253-254 or 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
Modern foreign language (See paragraph below)	0-4
Science	2
Philosophy (excluding courses in logic)	3
Religion and theology	2
Communications	2

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

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

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

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

Natural Resources

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 60.

Michigan State University also provides training in various sorts of natural resources fields. The two-year "non-preference" program described under Agriculture on page 57 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, in a program being terminated with the class beginning in 1984, 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 71. 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 will be terminated with the class beginning in September, 1984. This program requires students to complete one year at the college before trans-

ferring to the Medical Center. During the first year in this program, the student takes college courses that are required prerequisites for the nursing courses which are taught in the last two years. 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.

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 prepharmacy program which satisfies the requirements of the School of Pharmacy at Ferris State College in Big Rapids, Michigan, is given below. Students wishing to transfer to other schools should correspond with those schools and consult the pharmacy adviser, 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	1-2½
Economics 151	1
Political Science 201	1
Psychology 151	1

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 395. No more than eighteen courses in art may be applied to the degree. This program is not appropriate for those seeking teacher certification.

The liberal arts core must include:

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

Bachelor of Science in Accountancy Degree

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

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

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

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

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

In addition to the specified courses from the Department of Economics and Business, the student must complete eighteen courses in other departments which must include one core course each in history, philosophy, and religion and theology, plus an additional course from these departments or Interdisciplinary W10, Christian Perspectives on Learning; a course in the natural sciences; a course in political science, psychology, or sociology; a course in English or American literature; a course in the fine arts or foreign culture and another course in 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 core	1
Psychology, sociology or political science core	1
Religion and theology core	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 core	1
Natural science core	1
Interim elective	1
<i>Third year</i>	COURSES
Business 301, 302, 306, 350, 370	5
Business 325, 326, Economics 323, 324	1
Arts or literature core	1
History, philosophy, or religion and theology core	1
Interim elective	1
<i>Fourth year</i>	COURSES
Business 310, 311, or 315 (all 3 for CPA candidates)	2
Business 305, 380	2
Economics 331-339, or 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 core	1
Communication 100	½

ADMISSION

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

Students wishing to transfer from another school should apply to the Office of Admission. In general, transfer students must meet the same course requirements as students who begin their programs at Calvin, must have had a cumulative grade point average of at least 2.5 in their previous college education, and will receive credit for no course completed with a grade below C (2.0). In accord with Calvin's commitment to an integration of the Christian faith with professional engineering education, transfer students must take at least one liberal arts course each semester. 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 business course, and an interim course integrating the humanities and technology. Courses can be chosen to provide concentrations in civil, electrical, mechanical engineering and, in consultation with the department, in general engineering. Electives require departmental approval.

<i>Civil engineering concentration, third year</i>	COURSES
Engineering 305, Mechanics of Materials	1
Engineering 309, Fluid Mechanics	1
Engineering 310, Thermodynamics	1
Engineering 320, Hydraulic Engineering	1
Engineering 326, Structural Analysis	1
Basic science elective	1
Fine arts core	1
Religion and Theology core	1
Interim in the humanities and technology	1
<i>Civil engineering concentration, fourth year</i>	COURSES
Engineering 313, Soil Mechanics and Foundation Design	1
Engineering 327, Structural Design	1
Engineering 340, Engineering Design Project	1
Engineering elective	1
Advanced mathematics elective	1
Business 348, Business Aspects for Engineers	1
Philosophy core	1
Literature core	1
Engineering Special Topic, interim	1
<i>Electrical engineering concentration, third year</i>	COURSES
Engineering 304, Fundamentals of Digital Systems	1
Engineering 307, Network Analysis II	1
Engineering 311, Electronic Materials and Devices	1
Engineering 312, Analog Computation, optional	½
Engineering 330, Electronic Circuits, Analysis, and Design	1
Basic science elective	1
Mathematics 333, Advanced Analysis	1
Philosophy core	1
Religion and Theology core	1
Interim in the humanities and technology	1
<i>Electrical engineering concentration, fourth year</i>	COURSES
Engineering 315, Control Systems	1
Engineering 325, Digital Circuits and Systems Design	1
Engineering 336, Advanced Circuit Design	1
Engineering 340, Engineering Design Project	1
Engineering elective	1
Business 348, Business Aspects for Engineers	1
Literature core	1
Fine arts core	1
Engineering special topic, interim	1

<i>Mechanical engineering concentration, third year</i>	COURSES
Engineering 305, Mechanics of Materials	1
Engineering 309, Fluid Mechanics	1
Engineering 310, Thermodynamics	1
Engineering 312, Analog Computation, optional	½
Engineering 316, Heat Transfer	1
Engineering 324, Materials and Processes in Manufacturing	1
Basic science elective	1
Fine arts core	1
Religion and Theology core	1
Interim in the humanities and technology	1
<i>Mechanical engineering concentration, fourth year</i>	COURSES
Engineering 317, Engineering Instrumentation	1
Engineering 329, Machine Design	1
Engineering 340, Engineering Design Project	1
Engineering elective	1
Advanced mathematics elective	1
Business 348, Business Aspects for Engineers	1
Philosophy core	1
Literature core	1
Engineering special topic, interim	1

THIRD YEAR FOR STUDENTS PLANNING TO TRANSFER

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

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

Bachelor of Science in Nursing Degree

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

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

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 year—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 375 in the junior year; and 401, 425, 472, 474, and 482 in the senior year.

The typical prenursing program is as follows:

	COURSES
<i>First Year</i>	
Biology 131, 205	2
Chemistry 113, 114	2
Psychology 151	1
Sociology 151	1
English 100	1
Art, music, etc. core	1
Religion, history, philosophy or Interdisciplinary W10, core	1
Physical education	½
<i>Second Year</i>	
	COURSES
Biology 206, 336	2
Psychology 201	1
Religion core	1
History core	1
Literature core	1
Philosophy core	1
Art, music, etc. core	1
Communication 100	½

<i>Third Year</i>		COURSES
Nursing 301, 311, 321, 373, 352, 375		7¼
Elective		2
<i>Fourth Year</i>		COURSES
Nursing 401, 425, 472, 474, 482		6¾
Elective		2

The nursing courses are described on pages 151–159 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.

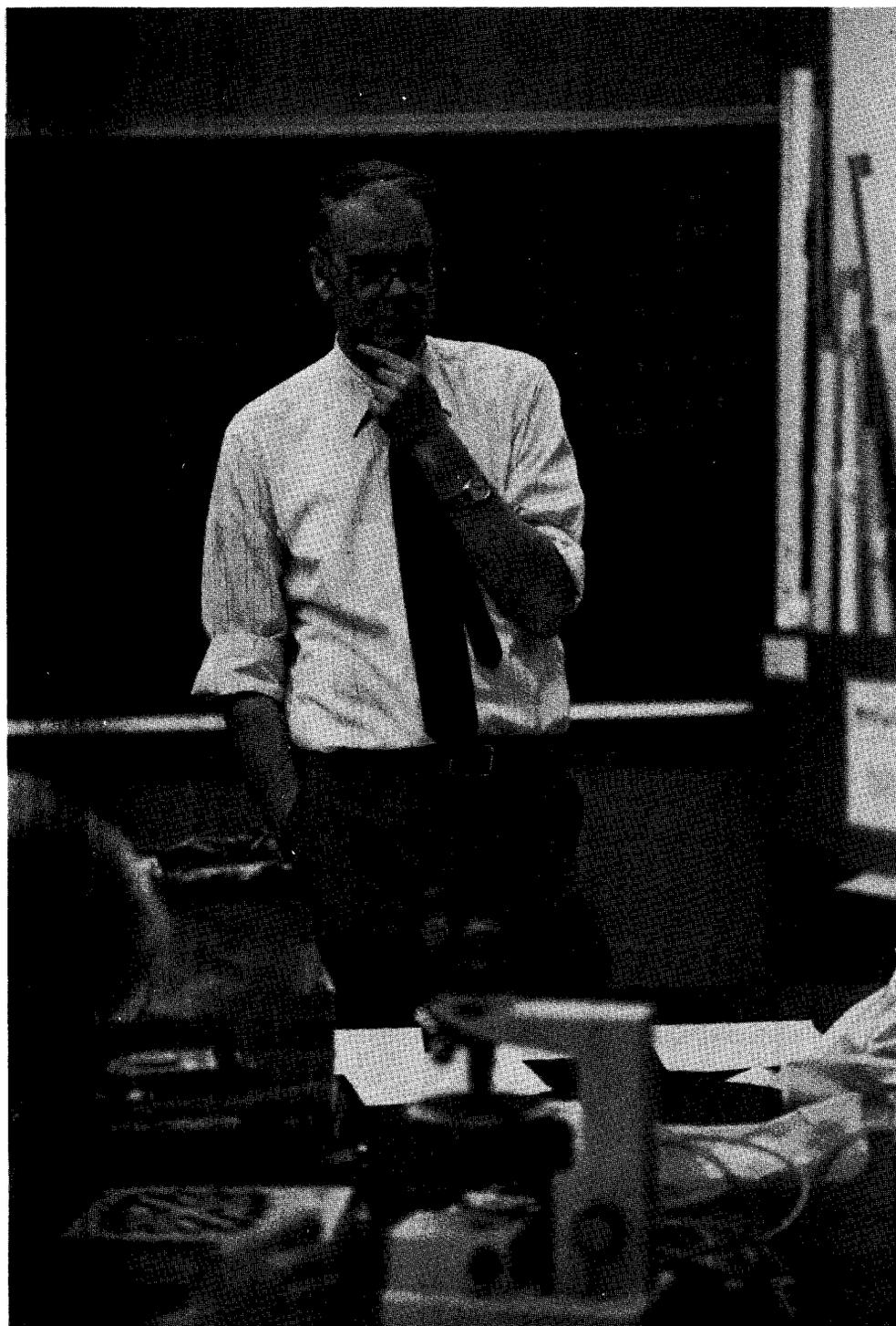
REQUIREMENTS FOR THE DEGREE

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 49 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 in-

structor. Mr. A. Leegwater. Not offered in 1984-85.

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

301 Introduction to Bilingual Education.* This course will prepare teachers to be qualified to teach in classrooms where English is the second language. Students will be concerned with both the theory and the skills necessary to teach speaking, reading, writing, and comprehension in a bilingual situation. The course includes such matters as linguistics, language interference, vocabulary, sentence structure, idioms, teaching English as a second language, placement of the newly-arrived student, choice of learning materials, and the use of specialized audio-visual aids. Each student will observe

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.

and then practice in local bilingual classrooms. Paper and an examination. Prerequisite: Spanish 202 Mrs. Y. Byam.

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

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

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

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

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

GRADUATE COURSES

561 Christianity, Learning, and Culture I. F. This course deals both critically and con-

structively with two broad areas, Christianity and learning and Christianity and culture. It introduces students to the variety of approaches to these questions in the Christian tradition with particular attention to views in the Reformed tradition that have shaped the outlook at Calvin College. Prerequisite: admission to the Master of Arts in Christian Studies program. Staff.

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

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

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

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

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

JANUARY 1985 INTERIM

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

its relation to culture produce different kinds of secular and Christian colleges. The ground is thus laid for a critical examination of one's academic experience at Calvin College. Taught by a committee representing the several disciplines and open to freshmen and sophomores. *Mr. P. De Boer (chairman).*

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

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.*

W16 Common Christian Struggles. Although the Christian life is ultimately one of triumph and joy, most of us still struggle with low self-esteem, doubt, anger, apathy, loneliness, and other Christian struggles. The goal of this course is to better understand the nature of such struggles and to assess the various interpretations and advice given to Christians. Considerable reading, willingness to discuss, and various test/paper options are required. Texts will be available in December for pre-interim reading. *Mr. W. Joosse.*

W17 Interim in Greece: The Classical Background of Early Christianity. A three-week study tour of the major sites of ancient Greece, with special emphasis on the great centers of classical civilization (Athens, Crete, Mycenae, Olympia, Delphi) and the cities associated with the ministry of St. Paul (Corinth, Philippi, Thessalonica). Lectures on Greek history, literature, art, philosophy, and religion are presented on location by the instructors. Requirements include prior completion of a reading list, preparation of one site report for delivery on location, and submission of a journal upon return from Greece. Prior course work in Greek language or civilization is helpful but not required. Fee of approximately \$1,750. Off-campus. *Mr. K. Bratt, Mr. C. Orlebeke.*

W18 Contemporary Art and Theater in New York City. An interim such as this provides the opportunity to study the basic concepts of twentieth century art and to experience it. Students examine the analytical approach and the problems related to twentieth century art as displayed in the International Style of architecture of LeCorbusier and Gropius and realism of Ibsen's drama and the structures of Picasso and Mondrian. Students examine expressionism and problems of emotional awareness as displayed by such architects, dramatists, and painters as Wright, Beckett and Pirandello, and Pollock. Students will spend a week in New York visiting architectural sites and museums and attending plays. Lectures and discussions will be an integral part of the experience. Students attend class on campus before going to New York, read assigned articles and dramas, and present panel discussions of plays viewed. These discussions should reflect their ability to link concept with experience. A paper. Fee of approximately \$500. Off-campus. *Mr. E. Boevé, Mrs. E. Boevé.*

W19 Folklore of Foreign Lands. A study of tales, proverbs, local legends, superstitions, traditional customs, and popular beliefs of Germany, Austria, Switzerland, and parts of northern Europe as they can be found in the past and present times. The study ranges from a visit with the mighty Vikings in the North to the dwarfs of the Rhine River; it includes legends of the brothers Grimm; it contrasts Dr. Faust's pact with the devil and the pranks of various people; it invites students to be with the mountain spirits of Silesia and witness the spring celebrations in the Black Forest and the Alps.

Slides, movies, demonstrations, records, tape recordings, textbooks, quizzes, conversations, lectures, presentations of projects, and eyewitness reports. *Mr. C. Hegewald.*

W21 Women and Changing Work Roles. An investigation of how and why the work life choices of women are changing. The course will examine the implications of these changes for future employer policies as well as personal career choices and family lifestyles. Course resources will 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.*

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

W24 Proverbs in Bible and Life. Beginning with the biblical Book of Proverbs, the course asks how proverbs are to be understood and used. It explores the use of proverbial wisdom in such books as Judges, Samuel, the letters of Paul, and in the teachings of Jesus. The contemporary use of Proverbs, of course, is stressed throughout. Lectures, discussion, and one seminar presentation or paper. *Mr. R. Van Leeuwen.*

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

and a novel by a contemporary African writer. A final examination. *Mr. D. Wilson, Mr. J. Muwonge.*

W26 Calvinism and Racism. The course will study pattern and kinds of ethnocentrism and racism in the modern and contemporary world. Particular attention will be given to the role of religious conviction in promoting anti-Semitism and the several kinds of racism. The topic will then be narrowed to a study of the particular role of Calvinism in European, South African, and North American racism. During the last week of the course students will assist in conducting an international conference on this subject that will be jointly sponsored by the Meeter Center for Calvin Studies and the Interim Lecture Series committee. Each student will be required to submit a position paper on the subject after the conference has been completed. Enrollment will be limited to fifteen persons, and the prior permission of the instructor is required for admission. *Mr. H. Rienstra.*

W27 An Issue of Life? Since the Supreme Court decision of January 22, 1973, that legalized abortion in America, public opinions on the issue may have sharpened but discussion may have waned. This course will examine several of the key issues involved from a pro-life perspective, including, for example, the history of the Supreme Court decision and subsequent legal and political developments, modern medical developments in fetology, the abortion practice in America today, history of the Right to Life movement, and pregnancy counseling agencies. A complete course syllabus including guest speakers on medical and ethical issues will be available by the time of registration. The class will include an optional trip to Washington, D.C. for the annual March for Life, which coincides this year with inauguration. Cost for the trip will be approximately \$200. Classwork will include group projects, presentations, and a final examination. *Mr. J. H. Timmerman*

W28 Religion in Chinese Life. Students will study Chinese ideas of sin and salvation, as seen in actual religious practice. Two ritual dramas will be given particular attention using slides, recordings, and texts: 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 is to develop an awareness of the universality of basic religious concerns and of the variety of their ritual and credal expressions and to become conscious 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*

W29 The Bible and Psychology. This course aims to assist students interested in psychology in developing a world view which is both consistent with such Christian concepts as creation, fall, and redemption and with the scientific method as it is applied to psychology. The course examines different Christian approaches to integration. Selected psychological theories will be studied in the light of different theological and scientific approaches. Readings will be primarily of a theological nature but will include a work dealing explicitly with integration. Two papers will be required, one of which will be presented orally in class, and a final examination. Prerequisite: Psychology 151. *Mr. E. Johnson*

W52 Interim in Friesland. An introduction to the history, culture, and language of the Frisians. Students will engage in intensive language study, attend at least a dozen lectures given by native instructors, and go on frequent excursions to places of historical and contemporary interest. During much of their stay, students will be housed with local families and, by participating in their cultural activities, will thus experience authentic Frisian life. Some time will be given near the end of their stay for individual study and travel. Tests on language study, written reports on lectures and research, and a journal. Fee of approximately \$1,200. Prerequisites: a rudimentary facility with the language or a strong interest in gaining such facility, and permission of the instructor. Off-campus. *Mr. H. Baron.*

W53 Christianity and Sport. This course is designed to challenge the student to develop his or her philosophy of sports play as a Christian. Topics such as competition, amateurism, and professionalism, educational institutions and athletics, the ethics of sport, work and play, religion and sport, modern practices in big-time sports, and youth sports are studied. Lectures, films, visiting specialists, interviews, and reading. The

course concludes with a take-home exam as a summary of the student's views on sports, play, and competition. Previously PE W50. Prerequisite: Philosophy 151, 153, or permission of the instructor. *Mr. M. Zuidema.*

W54 Philosophy of Technology From Frances Bacon's *The New Atlantis* (1624) to B.F. Skinner's *Beyond Freedom and Dignity* (1971), many have seen technology as the great hope for improving the human condition. Others, since the Industrial Revolution and especially in this last half of our century, have criticized this hope as a mirage and have regarded technology as machine out of control. This course aims to develop an understanding of technology and its impact and to assess some of the arguments of its proponents and critics. Drawing on recent philosophical writings, it will try first to define what technology is, determine its relations to science and to engineering, and identify the nature of technological knowledge and design. The class will then examine some of the most significant critiques and defences of technology, seeking to understand the underlying issues from a Christian perspective. Students will be evaluated through short quizzes and papers, a final examination, and class participation. Prerequisite: one course in philosophy or permission of the instructors. *Mr. L. Van Poolen, Mr. S. Wykstra.*

W55 Science and Religion: Fundamental Questions and Controversial Issues. Modern science has been one of the great solvents of traditional belief and at times it has seemed to conflict with fundamental Christian doctrines concerning creation, human nature, and God's role in sustaining the order he has created. Science and religion controversies have strained the fellowship of believers, undermined the faith of many, and raised questions about the credibility of the Christianity. There is much to learn from such controversies. They help us to consider more carefully the strengths and limitations of scientific knowledge, the assumptions we bring to the reading of Scripture, and the ways in which the work of both scientists and biblical scholars inevitably reflect social and cultural influences. These issues and others are the focus of this year's project of the Calvin Center for Christian Scholarship. In daily classes the four Center Fellows (H. Van Till, D. Young, J. Stek, R. Snow) will present the results of their work during the

fall semester, and students will meet for discussion of the issues raised in lectures. In addition to assigned readings, students will be responsible for a ten page research paper.

Topics may range from hermeneutics to the current creation/evolution controversy. Prerequisite: sophomore or higher standing. Mr. R. Snow

Academic support

E. Diephouse (director), J. Heerspink, E. Greydanus, M. Miner, 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 mechanics. Materials are taught with particular emphasis on development of mathematical thinking and problem-solving. The course is designed to bring students whose mathematics background is weak to the level of competence needed for Mathematics 100, Economics 151, Astronomy 110, Biology 111, Chemistry 110, Physical Science 110, and other core courses. Not intended for students in mathematics-oriented majors. Open by permission only. Mrs. E. Greydanus

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

JANUARY 1985 INTERIM

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

Professors E. Boevé, R. Jensen (chairman), C.S. Overvoorde
Associate Professors H. Bonzelaar, C. Huisman
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, two introductory studio courses, and three intermediate or advanced studio courses. All art majors are required to participate in senior exhibition during the spring semester of their senior year.

The minimum major program in art history is 231, 232, six courses from 233, 235, 236, 238, 240, 241, and Classics 221, and an approved interim course in art

history. Philosophy 208 is recommended. The minor requires 231, 232, and four from 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 or photography 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. Directed teaching in art is available only during the spring semester. The adviser for this program is Mrs. H. Bonzelaar.

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

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

STUDIO COURSES

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

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

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

215 Principles of Elementary Art Education. F and S, core for students in elementary education and recreation majors. The course introduces the nature of art and philosophy of art in education and includes methods and techniques for organizing and motivating art introduction on the elemen-

tary school level. The introduction to the art man has produced illustrates how art has served culture over the ages. The course includes lectures, demonstrations, and art teaching experiences in the school. Research paper required. *Mrs. H. Bonzelaar.*

216 Principles of Secondary Art Education. S. The course focuses on the philosophy and curriculum of art in education, and on methods of organizing and motivating art on the secondary education level. An exploration of media including enameling, jewelry-making, weaving, and batik. Prerequisites: 205 and 209. *Mrs. H. Bonzelaar.*

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

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

311 Introduction to Ceramics.* S. An introduction to clay and glazes and their use. Emphasis is on hand-building techniques as

a means of discovering the expressive and functional possibilities of the medium. Readings on the history of ceramics are required. Materials fee. Prerequisite: 209. *Mr. C. Huisman.*

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

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

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

315 Advanced Ceramics.* 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: 210. *Mr. C. S. Overvoorde.*

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

322 Advanced Printmaking.* F and S. A further investigation of the printmaking media allowing students to develop the unique qualities of a particular medium or combination of media in relation to their own visual

ideas. Materials fee. Prerequisite: 321. *Mr. C. S. Overvoorde.*

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

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. *Mr. R. Jensen.*

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

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

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

350 Introduction to Graphics.

351 Intermediate Graphics.

360 Introduction to Photography.

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 1984-85.

235 Renaissance Art.* S, 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 peri-

od 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 1984-85.

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

240 History of Modern Painting and Architecture. S, core. A study of painting from Impressionism to the present with emphasis on Expressionism, Abstractionism, Non-Objectivism, and Abstract Expressionism. Architecture is studied in relation to programming, technology, materials, and site, beginning with Sullivan, Eiffel, and Gaudi, and continuing into the twentieth century with Wright, Le Corbusier, Mies vander Rohe, and Saarinen. *Mr. E. Boevé.*

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

The following classics course may be included in art concentrations.

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

GRADUATE COURSES

580 Workshop in Methods, Materials, and Research in the Fine Arts. The course will attempt to show the interrelationships

of the fine arts art, music, speech and to establish a curricular basis for the teaching of the fine arts from a Christian perspective. *Staff.*

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

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

JANUARY 1985 INTERIM

W10 What About Architecture? Each student will experiment in two and three dimensional space planning and evaluation. The exposure includes: brief history of architecture, field trip through downtown buildings, sketching, model making, guest speakers from related fields, lectures, and a student design project. Evaluation will be based on participation, reports, quiz, and student design project. *Mr. C. Posthumus*

W50 Watercolor Painting The watercolor medium, which is a major form of expression for many artists, 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. This interest has continued into the twentieth century, especially under the Oriental influence. This course introduces traditional and contemporary techniques of watercolor by slide presentations, and students will do a series of watercolor paintings. Prerequisite: 209. *Mr. C. Overvoorde.*

W53 Artists Working in New York City. This course gives art majors the opportunity to experience the effects of the New York environment as they live and work in the lower Manhattan area for two weeks. As a supplement to their creative activity, students visit galleries, museums, and alternative exhibition spaces, as well as engage in discussions with artists and gallery directors. Prior to going to New York, students will be required to attend classes on campus to engage in assigned reading, lectures, and discussions on contemporary art in New York. Fee of approximately \$400. Prerequisite: one course from 309, 310, 311, 320, 325, or 360 and/or permission of the instructor. *Mr. M. Bolt.*

W54 The Arts of Dyeing: Ikat and Batik. Students explore ancient and contemporary forms of artistic expression with textiles. They employ color theory in precision dyeing of batiks, fabrics patterned by the application of liquified wax or its substitute to resist dye on fabrics; ikats, fabrics woven from resist-dyed fibers; and by direct application painting or printing on fabric. Students use fiber-reactive dyes on a variety of natural materials. A study of classical designs done by people throughout history and contemporary artistic statements provides context and inspiration for students' work. Methods of teaching include audiovisual presentations, lecture demonstrations, guest speakers, and a field trip. A research paper will elaborate the history of art of dyeing. Fee of \$30 for supplies and field trip. Prerequisite: 209 or permission of the instructor. *Mrs. H. Bonzelaar.*

W55 Alternative Photographic Processes and Drawing. This course explores the various photographic techniques that can extend the sensibilities, ideas, and visual capacities of the artist in the creative process of drawing. The alternative photographic processes explored include electrostatic reproduction, kwik print, photo screen printing, cyanotype, blue print and inkodye. The students will create original drawings combining traditional and contemporary marking media with the alternative photographic processes. Techniques possible are multiples, series, transparent overlays, extended color effects, superimposition, photographic collages, and textural effects. Historical and contemporary drawings will be studied for philosophical and image stimulation and direction. Prerequisite: 210 or permission of the instructor. *Mr. R. Jensen.*

W56 Illustration This course will focus on harnessing art skills within commercial limitations. It will cover the process of making art for reproduction including: (assignment) contract, concept, research, roughs, comps, and finished art. Projects will range from simple black and white drawings to full color work. Evaluation will be made on the basis of fulfilling contracts and a final class/individual critique. Prerequisites: 209 or permission of the instructor. *Mr. P. Stoub.*

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

IDIS W18 Contemporary Art and Theater in New York City. *Mr. E. Boevé.*

Astronomy

*Professors R. Griffioen (chairman, Department of Physics), H. Van Till
Assistant Professor S. Haan*

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

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

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

201 Contemporary Astronomy. F, core. An introduction to modern astronomy and

astrophysics for students concentrating in the area of science and mathematics. Major topics include the nature of stars and galaxies, the physical processes occurring in various celestial objects, and the current cosmological theories. Lectures, laboratory exercises, and observing projects. Prerequisites: Mathematics 161 and one course in college physics other than 110 or 112. Not offered 1984-85.

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, H. Bouma, A. Bratt, A. Gebben (chairman), B. Klooster, B. Ten Broek, P. Tigchelaar, G. Van Harn, 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 approved equivalent courses.

The program of concentration is eight course units including 131, 201, 202 (or 205-206), 222, at least one investigative course, two additional 300-level courses, and 395. If 205-206 are included, 323 and 331 may not be included.

Required cognates include either one year of physics (221-222 or 126 and 225) or one year of mathematics (131-132 or 161-162), Chemistry 103-104 (or 113-114) plus a second year of chemistry (301-302 or 253-254) or a year of geology (151-

152). Computer science is recommended. These cognates are minimum requirements. Students planning to do graduate work in cell and molecular biology are advised to complete both the physics and mathematics cognates and organic chemistry. Those planning careers in environmental biology should include the geology cognate and a course in statistics.

Prospective secondary teachers should complete the normal program of concentration with the addition of 361. Furthermore, one of the 300-level courses must be 338, 340S, 341, 346, or 352. A minor in physical science is recommended and may be constituted of the cognates plus Geology 313.

A secondary education teaching minor in biology consists of six course units: 131, 201, 202, 222, 361, and one from 338, 340S, 341, 346, 352. Geology 151, 152, and 313 are desirable electives.

Directed teaching in biology is available only during the spring semester. The adviser for biology teaching major and minor programs and for M.A.T. programs 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 met by 111, 215, 216, 217, 105-106, 107, or 131.

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 science of biology using microbes as examples. Microbes are found in every environment where life can exist, and some affect our lives every day. This course considers the microbiological aspects of food production and spoilage, soil fertility, degradation of toxins, sewage treatment and water quality, infectious disease and its control. Organisms studied include algae, yeasts, molds, protozoa, viruses, and, especially, bacteria. Lectures and laboratories. *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.*

230 Crop Science. S. An introduction to crop plant structure and function, the effects of environmental factors on growth, development and reproduction, crop production, crop management, and plant protection. Representatives of the major crop groups in world agriculture are surveyed including those of the tropics. Lectures and laboratories. Prerequisites: Biology 201 or 217. *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, field trips, and laboratory. Offered as a summer course at AuSable Trails Institute of Environmental Studies located near Manacelona, 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 basic 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: Gastrointestinal Physiology.* S. The gastrointestinal processes of secretion, digestion, motility, and absorption are studied in a lecture-seminar format and through laboratory investi-

gations. Each student conducts a research project and presents a paper and seminar on that project. Prerequisite: 202 or equivalent and permission of the instructor. *Mr. R. Nyhof.*

Advanced Courses

Prerequisites for all advanced courses include at least three basic 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.*

321 Genetics and Development.* F. A study of modern concepts of the gene and the analysis of progressive acquisition of specialized structures and functions by organisms and their components. The laboratory includes study of genetic and developmental phenomena of selected organisms. Lectures and laboratory. Prerequisites: 202 and Chemistry 114, 253, or 301. *Mr. B. Ten Broek.*

323 Comparative Vertebrate Anatomy.* F. A study of the comparative anatomy of vertebrates. Credit cannot be applied toward a biology major for both 205 and 323. Prerequisite: 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 microorganisms with emphasis on the bacteria. Prerequisites: 201, 202, 206, or 221; Chemistry 114, 253, or 301. *Miss B. Klooster.*

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

361 Teaching Investigations in Biology. F,I,S. One half course or one course unit. This course, intended for biology majors and for minors in the secondary education program, is designed to train students in the teaching of laboratory experiences in biology. The student intern will be involved in the observation, preparation, writing, and teaching of laboratory exercises. Prerequisites: 220 or permission of the instructor. *Mr. B. Ten Broek.*

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:

IDIS 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.*

JANUARY 1985 INTERIM

W10 **Biology of 1985: Clones, Chimeras, and Cancer.** After an introduction which examines the roots of molecular genetics in cell biology, classical genetics, and cytogenetics, this course traces the development of molecular genetics from 1953 until the present mini-revolution involving recombinant DNA. The cloning of genes by this new technology, the production of genetic chimeras by microinjection of copies of cloned genes from one species into the fertilized eggs of another species, and the relationship between cellular oncogenes and certain forms of cancer are studied in some detail. Possible applications of these new developments for the detection, treatment, and prevention of inherited diseases are discussed, especially those with ethical implications. Significant attention is given to the persons who have developed important new techniques and concepts which have led to our present state of knowledge in molecular genetics. Quizzes, tests, and an examination. Prerequisites: high school biology and some background in chemistry and physics. Biology core. *Mr. B. Ten Broek.*

W52 **Marine Biology.** An introduction to life in the oceans. Emphasis is on the biotic and abiotic factors which influence marine organisms and on the resulting patterns of abundance and distribution of life. The ecosystem concept is emphasized in examining the various marine environments. Designed for students with an interest and some background in biology. Tests and a course paper will be used to evaluate performance. Pre-

requisite: one course in biology. *Mr. A. Bratt.*

W53 **Common Drugs and How They Work.** This course is designed to provide the student with an understanding of how prescription and over-the-counter drugs work. General concepts of pharmacology are discussed, including receptor sites, drug-receptor site interaction, termination of drug action, and side effects of the drugs. Physiological principles relating to specific drug mechanisms are reviewed. Common medications, their mechanisms of action on the physiological system, and their advertising are examined. The format is primarily lecture but includes laboratory demonstrations and films. Evaluation of students is based on a paper, a short presentation, and a final examination. Prerequisite: one course in biology. *Mr. R. Nyhof.*

W54 **Health Care in a Third World Country.** The delivery and practice of health care in Liberia, whether it be in the relatively modern city of Monrovia or in the less developed towns and villages in the interior, is considerably different from that in the United States. Tours, lectures at Liberian government hospitals, multinational corporation hospitals, and mission hospitals by Liberian physicians and American physicians residing in Liberia. Visits to village health clinics are arranged and the class will accompany the village health workers into the small interior villages as they provide preventative health information and medical care. This interim course exposes the students to particular health care problems in a third world country and permits them to be a part of the solution. The students will also be exposed to medical missions and will be challenged to consider the option of medical missions early in their careers. The class will meet several times in the fall prior to the interim session. Evaluation of students is based on a journal, a paper, and class participation. Fee of approximately \$1,900. Prerequisites: satisfactory completion of 131 or its equivalent and permission of the instructor are required prior to registration. Preference is given to those in the health sciences programs. *Mr. P. Tigchelaar.*

W55 **Animal Communication.** An introduction to the diversity of behavioral mechanisms by which animals communicate with each other. The course explores various models used for analyzing animal communication and examines the physiological

mechanisms, development, and evolution of communication behaviors. Lectures, films, and laboratory sessions. Students will be evaluated on tests and papers developed from laboratory or library research. Prerequisite: 202, another course in zoology, or permission of the instructor. *Mr. R. Van Dragt.*

W56 Electron Microscopy Techniques. The student will concentrate on fixation, embedding, and ultramicrotome techniques for the preparation of specimens suitable for electron microscopy, proper use of the electron microscope, darkroom techniques essential to photoelectron micrography, and the interpretation of electron micrographs. Course work includes a series of brief lectures, considerable hands-on experience, and an ultrastructure research project. Prerequisite: 201, 202, or 221 Chemistry 253 or 301, and the permission of the instructor. *Mr. U. Zylstra.*

W58 Plants and Civilization. The role of plants, such as rice, wheat, corn, cotton, and cassava in the establishment and development of world centers of civilization. The geographic origins of economic plants, the uses of plants such as drugs, and the role of plants in religious religious rites. Lectures, assigned readings, films, guest speakers, and possible field trips to botanical gardens and herbaria. A term paper on a plant species or plant group which has had a significant role in human history is required. Non-science students are encouraged to pursue a topic which combines readings in both botanical literature and in the literature of their own specialization. Although a background in botany is helpful, necessary botanical concepts and terminology are learned as the course progresses. Biology 111, 131, or 217 recommended. *Mr. A. Gebben.*

W59 Topics in Human Health. Health, it has been said, is not a condition but an adjustment, not a state but a process. It is more than the mere absence of disease or defect, disability, pain, or decay, and it encompasses the presence of vigor and vitality, social well-being, and a zest for living. Each of us continually adapts to changes in our physical, biological, social, and psycho-

logical environments. Adaptation is not a passive process, we choose our adaptive mechanisms and thereby influence our health. Each of us is responsible for his or her own health, yet we often try to divest ourselves of this responsibility and may expect others to keep us healthy. In the past many persons have held that a physician could insure their health. In this class the students will explore their attitudes toward health and will examine those held by others. Topics include mental health, physical fitness, nutrition, and communicable disease. Textbook and other readings, tests, and written reports will be the primary basis for earning a satisfactory grade in this course. Lectures, guest speakers, films, and discussion of topics. Prerequisite: one course in biology or permission of the instructor. *Miss B. Klooster.*

W60 Perspectives in Medicine This seminar course is designed to acquaint students with several issues and dilemmas in the practice of medicine and with the methodology of the science of medicine. The course examines selected topics in the history, philosophy, and science of medicine with particular emphasis on the methodology and results of human experimentation and medical research. The course includes an analysis of the criteria for defining the beginning and the end of human life. The research and medical treatment for two infectious diseases and two genetic diseases will be studied through readings and discussion of the science literature. Students will learn to conduct literature searches including a computer-aid literature search through MEDLINE and will present papers on current topics such as fetal research, organ transplantation, development and use of artificial organs, cancer diagnosis and treatment, gene therapy, AIDS, etc. Lectures, literature searches/bibliographies, presentation, and a final examination. A partial reading list will be available in December. Prerequisite: junior or senior status as biology major or biology-chemistry group concentrate. *Mr. H. Bouma.*

IDIS W13 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, R. De Kock, A. Leegwater, K. Piers (chairman), W. Van Doorne

Associate Professor L. Louters

Assistant Professor T. Zwier

PREREQUISITE to a concentration in chemistry is a minimum average of C (2.0) in 104 and in one course from 201, 253, or 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 one course from 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 or 151 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, 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. Directed teaching in chemistry is available only during the spring semester.

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. *Mr. L. Louters.*

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

103 General Chemistry. F. A study of the basic principles of chemistry, with emphasis on the laws of chemical combination, theories of atomic structure and chemical bonding, the periodic law, kinetic theory, and chemical and physical equilibria. Laboratory. Prerequisite: one year of high school chemistry or permission of the department. *Staff.*

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

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

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

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

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. Laboratory. Prerequisite: 104. Not offered in 1984-1985

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

254 Organo-Biochemistry. S. A continuation of 253, concluding with a study of the

chemistry of metabolism and the application of quantitative methods to biochemical analyses. Laboratory. Prerequisite: 253. *Mr. R. Albers.*

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

278 Physical Chemistry. S. A study of the kinetics of chemical processes, molecular reaction dynamics, and electrochemistry. Laboratory consists of a study of experimental methods used in these areas and their application to analytical chemistry. Prerequisite: 277. *Mr. T. Zwiier.*

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. *Mr. R. Blankespoor.*

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

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

305 Advanced Organic Chemistry.* F. Lectures consist of a study of selected topics in advanced organic chemistry. Laboratory work consists of literature searches on assigned multi-step syntheses, followed by the preparation of the required compounds, and chemical and instrumental analyses at various stages of the syntheses. Prerequisite: 277 and 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: 277, Physics 225, and one course in mathematics beyond 162. Computer Science 141 or 151 is recommended. *Mr. R. De Kock.*

309 Spectroscopy and Instrumental Methods of Analysis.* S. A study of modern experimental methods with particular emphases on spectroscopic techniques. Methods covered include microwave, infrared, and visible spectroscopies, laser techniques, electron spectroscopies, NMR, mass spectroscopy, diffraction methods, and chromatography. The course emphasizes both the theoretical aspects and their application to fundamental physical measurements and to analytical procedures. Prerequisite: 278 or concurrent registration. *Mr. T. Zwiier.*

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

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

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

JANUARY 1985 INTERIM

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

mountains; descriptive elements of climate with respect to the earth as a whole, North America, and the Great Lakes region. Some time is devoted to a look at man's impact on climate through pollution as well as his attempts to control climate. Lecture, discussions, tests, and a visit to a local meteorologist. Prerequisite: high school chemistry or its equivalent. *Mr. R. Blankespoor.*

W52 Introductory Radiochemistry. A study of natural and induced radioactivity, including detection and measurement of radiation and the effects of radiation on man and his environment. Students will be encouraged to pursue their own specific interests within the broad general outlines of the subject. Laboratory includes some work with radioisotopes in chemical systems. In addition to morning class times, students should keep two afternoons free each week for laboratory work, either Monday and Wednesday or Tuesday and Thursday. Pre-

requisite: 103 or 113 or high school chemistry. Satisfies medical technology program, science studies group major, and teacher education concentrations in chemistry. *Mr. R. De Kock, Mr. W. Van Doorne.*

W54 Lasers: Their Properties and Uses. The course provides an overview of the properties of lasers, the mechanisms responsible for laser action, and the application of lasers to a wide variety of problems in fundamental research in industry. Special emphasis is given to applications in chemistry and physics, but will not be limited to such. Students will be required to present both written and oral reports. One or more field trips will be taken to universities and/or industries in the area to see some of the laser applications firsthand. Students will also gain experience using lasers where possible. Fee for field trip. Prerequisite: 104 or permission of the instructor. *Mr. T. Zwiier.*

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 251; either Classics 311 and 312 or History 301 and 302; and two courses selected from: Art 231, History 201, History 302 (if not elected above), History 303, Philosophy 312, Political Science 305, Religion 302, Religion 312, Communication 325, Communication 317, or additional courses (at 200 level or above) in the selected language.

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

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

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

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

The core requirements in the fine arts may be met by Greek 202, 204, 301, 302, any Latin course numbered 202 through 304, Classics 221, 231, and designated interims. The "foreign culture" requirement of certain designated preprofessional 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. F, core. A study of the major monuments and sites of ancient Greek and Roman civilization from the Bronze Age to the late Empire. Primary attention is devoted to the origins and development of Greek sculpture, painting, and architecture, and to their transformation in the arts of Rome. Ancient literary sources supplement the study of physical remains in this investigation of Graeco-Roman culture. Slide lectures, written reports. *Mr. K. Bratt.*

231 Classical Mythology. F, core. A study of the major themes in Classical mythology via the literature and art of Greece and Rome. Major literary sources are read in translation and supplemented by slides of Greek and Roman mythological art. Attention is given to various interpretations of the myths and their influence on Western culture. Lectures, discussions, and written reports. *Mr. K. Bratt.*

311 Greek History.* F. The political, social, and cultural history of Ancient Greece from the Bronze Age to the beginnings of Christianity. Special attention is given to such problems as the emergence of the city-state, the civilization of the Periclean period, the great intellectual movements of the fourth century B.C., and the features of Hellenistic civilization which exerted a shaping influence on Roman society and early Christianity. This course may substitute for History 301. *Mr. G. Harris.* Not offered in 1984-85.

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 Groten and

Finn, *A Basic Course in Reading Attic Greek.* *Mr. R. Wevers.*

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

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

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

203 Intermediate Greek B. F. Readings in Herodotus. Special emphasis is put on gaining reading proficiency in Greek prose, with some attention to the characteristics of Herodotus as historian in relation to Thucydides. Prerequisite: 102. *Mr. R. Wevers.* Not offered 1984-85.

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.* Not offered 1984-85.

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. *Staff.*

302 Greek Drama.* S, core. A reading of selected Greek tragedies with attention given to their poetic and dramatic qualities. Those matters of Greek culture, literary tradition, and history which help to understand the plays are noted. Assigned outside reading in other Greek plays. Prerequisite: 301. *Mr. G. Harris.* Not offered 1984-85.

LATIN

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

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. *Mr. R. Otten.*

201 **Intermediate Latin.** F. A thorough review of the essentials of grammar will accompany the reading of selected Latin prose. Prerequisite: two years of high school Latin or two courses of college Latin. *Staff.*

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

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

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

301 **Latin Epistolary Literature.** 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 Ear-

ly Empire and as commentaries on the careers and personalities of their authors. Prerequisite: 205 or 206. Offered in alternate years. *Mr. R. Wevers.* Not offered 1984-85.

302 **Latin Philosophical Literature.** Core. Texts selected from such authors as Luccretius, 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.* Not offered 1984-85.

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

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

JANUARY 1985 INTERIM

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.*

IDIS W17 **Interim in Greece: The Classical Background of Early Christianity.** *Mr. K. Bratt.*

Communication arts and sciences

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

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

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

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

Students wishing an emphasis in telecommunications—broadcasting, cable, and satellites—should take 150, 200 (or 100 and 110), 203 or 219, 230, 251, 252, at least two of the following: 253, 305, 325, an approved interim course, and an elective approved by the adviser. A joint theater/telecommunications emphasis consists of 200 (or 100 and 210), 203, 253 or 305, 317 or, with permission of the instructor, 318, 319 or 325, and an approved interim.

The secondary school teaching major consists of 200, 203, 211, 217, 219, 230, plus three and a half other courses. Directed teaching in speech is available only in the spring semester. 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.

Students wishing an emphasis in communications disorders should take: 100 or 214, 110, 150, 203, 215, 216, 307, and 308. The requirements for a Bachelor of Science in Communications Disorders are given on page 57.

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, 253, 304, 317, 318, and 325.

COMMUNICATION AND RHETORIC

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

150 Introduction to Communication Theory. 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.* Not offered 1984-85.

200 Advanced Oral Rhetoric. F and S, core. Composition and presentation of types of speeches, participation in various types of discussion, readings in rhetorical theory, and criticism of selected contemporary speeches. Prerequisite: 100 or equivalent. *Mr. 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. Not offered 1984-85.

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 1984-85.

TELECOMMUNICATIONS

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

252 Communication Ethics. 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. Prerequisites: Philosophy 205, Religion 311, or consent of the instructor. Not offered in 1984-85.

253 Television and the Contemporary Mind. F, core. The study of various important cultural forms in television, including drama, news, and documentary. Students analyze the conventional television genres including situation and domestic comedies,

anthology drama, westerns, detective shows, mysteries, soap operas, and adventure series. Course topics include: defining television art, the relationship between program content and social values, assumptions about human nature, and television's treatment of God and religion. *Mr. Q. Schultze.*

305 Persuasion and Propaganda. S. The theory and practice of persuasive communication. 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. *Mr. Q. Schultze.*

SPEECH EDUCATION AND DISORDERS

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

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

215 Introduction to Communication Disorders. F. A study of the child's speech development and the types of speech defects that may occur. The course is designed to help the classroom teacher understand and correct minor defects and to handle speech improvement in the classroom. The course will also serve to introduce the student to the profession of speech pathology and audiology. *Mr. M. Vande Guchte.*

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

307 Structures and Functions of the Speech Mechanisms. S. A study of the anatomy and physiology of the speech mechanisms, the involvement of the nervous system in the control of speech, and the acoustic characteristics of speech production. Prerequisite: 215. *Mr. M. Vande Guchte.* Not offered 1984-85.

308 Basic Audiology and Audiometry. S. A study of the fundamental aspects of hearing: the physics of sound, the anatomy of the ear, the nature of hearing and hearing impairment, and the testing of hearing. Prerequisite: permission of instructor. *Mr. M. Vande Guchte.*

THEATER 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.* Not offered 1984-85.

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 1984-85.

317 History of Theater and Drama. F, core. A historical and analytical study of

theater and drama from its origins to the eighteenth century. *Mrs. E. Boevé.*

318 History of Theater and Drama. S, core. A continuation of 317. An historical and analytical study of theater and drama from the eighteenth century to the present. *Mrs. E. Boevé.* Not offered 1984-85.

319 Design for Theater. S. A study of the theories and principles of theater design. This course builds on the principles taught in 219 and includes lectures, demonstrations, reading of plays, and the development of competence in set, light, costume, make-up, property, and publicity design. Prerequisites: 217, 219, or permission of instructor. *Mr. J. Korf.*

390 Independent Study.* F, I, S. Independent study of topics of interest to particular students, under the supervision of a member of the department. Prerequisite: permission of the department. *Staff.*

395 Seminar.* Research of an approved topic or topics under the supervision of a member of the department, and presentation of the results in a departmental seminar. Prerequisite: permission of the department. *Staff.*

JANUARY 1985 INTERIM

W12 From Student Senate to the Legislature: Modern Parliamentary Practices. This course, team-taught by the faculty parliamentarian and a former state senator, offers an in-depth study of the rules of order governing various deliberative assemblies. Lectures and discussions focus on such topics as the history and nature of parliamentary procedures, the constitution and by-laws, the role of the chairman, committee structures and reports, and legislative processes. Intensive practice is provided in the use of various motions and parliamentary strategy, conducting elections, and the preparation of minutes. Visits are made to deliberative bodies, such as the Student Senate, city and county commissions, church councils, Classis G.R. East, etc. The course culminates in a two-day visit to the state legislature in Lansing, hosted by Representative Vernon Ehlers and Senator Paul Henry. Quizzes, plus oral and written reports are required. Transportation and housing fee of \$25. *Mr. M. Vander Guchte.*

W13 Production of Historical Documentaries. Although documentaries can cover a wide range of topics and require a considerable amount of travel, students in this course will limit their travel to Chattanooga, Tennessee, and build their themes from the Civil War. Students will visit Lookout Mountain, Missionary Ridge, and Chocomauga to gain an understanding of the people who fought and lived in this area. Any aspect of the war may be used for research. Documentary makers, National Park Service historians, local libraries, and private collections will be used as sources in the gathering of visuals and historical materials necessary to compile a dramatic script suitable for video and/or theatrical production. A briefing on campus covers the preparation of documentaries as well as the battles that were fought in the Lookout Mountain area. The briefing takes about four days and the research work in Tennessee from seven to ten days. The remainder of the interim is spent on Calvin's campus arranging and editing the scripts. Following the interim, attempts will be made to interest producers in these scripts. Related books and articles will be available in December. *Mr. D. Holquist.*

W14 Theater in London: Styles of Production. This course investigates the factors that govern the choice of style for a theatrical production one of the most important decisions made by the director and designers. Many factors determine a correct choice of style, and this course addresses itself to those factors. The goals of the course are to provide students with specific information relevant to the choice of theatrical style, to expose students to a wide range of styles in a short period of time, to sharpen critical awareness, and to introduce the students to a unique cultural experience. London and Stratford are two cities which hold a special appeal for the students who are interested in the theater. London has over forty theaters producing plays simultaneously; Stratford is not only the birthplace of Shakespeare but one of the homes of the Royal Shakespeare Company. During the twenty-four days spent in England, the class will attend fourteen theatrical performances, attend morning lectures, present written critiques of each performance, and participate in evaluative discussions led by the instructor. A tour of the National Theatre, excursions to Oxford, Canterbury, and an overnight stay in Stratford are included.

One long weekend will permit travel into the English countryside, Amsterdam, Paris, etc. Fee of approximately \$1750. Off-campus. *Mr. J. Korf.*

W50 Growing up in America: The Wit and Wisdom of Jean Shepherd. Shepherd is one of America's foremost humorists. His work has spanned all of the major media, including radio, television, magazines, newspapers, film, and stage. He has won numerous awards for his short stories and has been cited for outstanding contributions by the TV Critics Circle and the Film Critics

Association. His work is concerned with what it is like to grow up in modern, secular society, and he approaches the subject with refreshing honesty and humorous insight. We will listen to several of his radio shows, view two of his PBS programs as well as his recent film, *A Christmas Story*, and will read several of his novels. Students must participate in class discussions and write two short papers. Prerequisite: sophomore status or higher. *Mr. Q. Schultze.*

IDIS W18 Contemporary Art and Theater in New York City. *Mrs. E. Boevé*

Computer science

*Professors. *D. Brink, † S. Leestma L. Nijhoff, C. Sinke (chairman, Department of Mathematics and Computer Science)*

Associate Professor M. Stob

Instructors M. Houseman, P. Prins

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, or 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.*

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

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

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

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

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

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

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

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

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

252 Data Structures. S. An analysis of structures for storing data and of algorithms

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

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

legal issues, future social impact. Prerequisite: senior status in computer science program of concentration. *Staff.*

JANUARY 1985 INTERIM

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 concurrency 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. 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. *Staff.*

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

Professor C. Hegewald (chairman, Department of Germanic Languages)
Associate Professor M. Bakker (program coordinator)

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

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

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

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

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

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

JANUARY 1985 INTERIM

W50 **Interim in the Netherlands.** This interim in the Netherlands and Belgium introduces students to the culture of these countries through visits to historic monuments, museums, institutions, schools, and factories, as well as through contact with the people. The students will stay with families, providing direct contact with the language all the time. Centers visited include Amsterdam, Den Haag, Haarlem, Leuven, Antwerpen, and many more. Students are required to keep a diary and write a full report. Fee of approximately \$1,000. Prerequisites: 102 or its equivalent and permission of the instructor. Off-campus. *Mr. M. Bakker.*

Economics and business

Professors E. Dykema, G. Monsma, D. Pruis

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

*Assistant Professors J. Brothers, D. House, S. Roels,
Instructor R. Hoksbergen*

THE DEPARTMENT OFFERS four majors leading to a Bachelor of Arts degree—business, economics, a group concentration in the social sciences, and a group concentration involving mathematics and economics or business—as well as a program leading to a Bachelor of Science in Accountancy. The department also offers minors in business, in economics, and teacher education majors and minors. Prerequisite to admission to any major is a grade of C (2.0) in Economics 121, 151, or 221.

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

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

For both the business major and the B.S. in Accountancy, the four-course requirement in economics is typically met by completing Economics 221, 222; one course from Economics 323–324 or Business 325–326; and one additional course from Economics 323–326, 331–339, or an approved interim course. Students who began by taking Economics 151 must continue with two courses from the 323–326 group and one additional course from Economics 331–339 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, and the computer science cognate. The economics emphasis requires Economics 221, 222, one from 323–326, three other departmental courses, and Mathematics 161, 162, 255, 261, 343, 344, and the computer science cognate. Variations should be approved by a departmental adviser.

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

The minimum mathematics cognate is 131 and 132; an alternative is 161, 162, 243. However 161, 162, 255, 261, 343, and 344 are recommended mathematics courses. Although the computer science cognate can be met by any course in computer science, Computer Science 100, 121, or 131 is recommended. One

approved interim course may be included in any program of concentration. The core requirement in the social sciences is met by Economics 151 or, normally for students majoring in economics or business, 221. However, only one of the courses may be counted toward a departmental major or minor.

BUSINESS

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

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

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

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

305 Cost Accounting.* F. Principles and methods of accounting for manufacturing and operating costs with emphasis on analysis and reporting to management to facilitate planning, control, and decision-making. Prerequisite: 202. (Previously 312) *Mr. J. Mellema.*

306 Income Tax. F and S. A study of Federal income tax law and of tax cases to provide a basis for an understanding and evaluation of that law and of the rate structure. Includes the implications of income taxation for business decisions. Emphasis on taxation of individuals with limited coverage of partnerships and corporations. Prerequisite: 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 1984-85.

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. An intermediate level course in macroeconomic theory emphasizing analysis of general business activity and the implications of changing business conditions for

business and public policy. Basic forecasting techniques are explained and the use of forecast information in firm and individual decision-making is evaluated. Also listed as Economics 326. Students may not receive credit for both this course and Economics 324. Prerequisites: Economics 151 or 222 and completion of or concurrent registration in Mathematics 131, 243, or 343. *Mr. E. Van Der Heide.*

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

358 Business Aspects for Engineers. F. An overview of the aspects of business important to engineering. Selected topics from economics, accounting, finance, marketing, management, and business law are included. Prerequisite: 151 and junior or senior standing in the engineering program. *Mrs. S. Roels.*

359 Internship in Business. S. These internships involve ten to fifteen hours of work a week under an employer supervisor and a series of internship seminars on campus. Placements may be in businesses or in not-for-profit organizations. Each intern, after consultation with the internship coordinator, will submit either an analytical journal or a research paper and a short personal evaluation of the internship. Prerequisites: three courses in business or economics, junior or senior standing, and permission of the internship coordinator. *Staff.*

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) *Staff.*

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 bargain-

ing. 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) *Staff.*

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) *Staff.*

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) *Staff.*

381 Advanced Topics in Marketing. S. This course deals with topics involving consumer behavior, the market research process, sales management, advertising, and marketing strategy. Prerequisite: 380. *Mr. J. Brothers.*

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

396 Business Policy Seminar.* S. An integrative study of business goals, strategies, and administration. Case studies, readings, reports, and a management simulation. Open to senior business majors. *Mr. 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. J. Dodge, Mr. E. Dykema, Mr. R. Hoksbergen, Mr. G. Monsma.*

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. Beversluis, Mr. R. Hoksbergen, Mr. G. Monsma.*

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. E. Van Der Heide.*

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

324 Intermediate Macroeconomics.* S. An intermediate course in macroeconomic theory which studies the theory of aggregate demand, the level of employment, the general level of prices, and economic growth. Students may not receive credit for both this course and Economics or Business 326. Prerequisite: 151 or 222. (Previously 321) *Mr. 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. 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 332) *Mr. J. Dodge.* Not offered 1984–85.

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.* Not offered 1984–85.

335 Labor Economics.* S. A study of labor markets and their relationship to the economy as a whole, with an emphasis on wage theory, the impact of trade unions, unemployment, income distribution, human capital formation, labor force participation, and public policies concerning such topics. Prerequisite: 151 or 221. *Mr. G. Monsma.*

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.* Not offered 1984–85.

337 World Poverty and Economic Development.* F. A study of the causes of widespread poverty in many nations and regions of the world, and a study and evaluation of policies designed for its alleviation. Prerequisite: 151 or 221. *Mr. E. Dykema.*

338 **International Economics.*** S. A study of international economic relations, stressing the fundamentals of trade theory, the balance of payments, problems of international disequilibrium, trade barriers, and efforts to promote international economic stability and growth. Prerequisite: 151 or 222. *Mr. R. Hoksbergen.*

339 **Public Finance.*** S. The effects of government spending and taxation on resource allocation and on the distribution of income. Students will consider current policy issues and will analyze major programs at the national, state, and local level. Prerequisite: 151 or 221. *Mr. E. Van Der Heide.*

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

349 **Internship in Economics.** S. These internships which will require the student to use the tools of economic analysis involve ten to fifteen hours of work a week under an employer supervisor and a series of internship seminars on campus. Each intern, after consultation with the internship coordinator, will submit a research paper and a short personal evaluation of the internship. Prerequisites: appropriate courses in economics, completion of the mathematics cognate requirements, junior or senior standing, and permission of the internship coordinator. *Staff.*

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

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 1984-85.

JANUARY 1985 INTERIM

W10 **Worker Participation in Management.** In response to the competitive challenge from Japan, and their own recent slow (or even negative) productive growth, many North American firms are experimenting with new types of relationships between

managers and other workers. Many of these new types of relationships involve more general worker participation in the decision-making of the firm on various levels, from "quality circle" or "quality of work life" participatory programs on the shop-floor level to workers' representation on boards of some corporations (e.g., Chrysler and Pan Am). The course will examine and evaluate these forms of worker participation, as well as older structures for worker participation, including Scanlon plans, employee stock ownership plans, worker cooperatives, and European-style co-determination structures. There will be visits to nearby firms having such worker participation policies, and/or visits from representatives of such firms. Each student will write a paper analyzing and evaluating some particular type of worker participation structure or a particular example of such a structure, and present it to the class. *Mr. G. Monsma.*

W11 **The Health Care System of the U.S.** Can health care be made affordable and accessible to all? What is the role of the hospital administrator, the physician, and the public and private third-party payer in today's health care matrix? Students will investigate the current systems of health care delivery, evaluate their performance, and consider proposals for future directions. The government's role as a distributor of health care services—Medicare and Medicaid; job health and safety legislation and tax policy; the nature and operating philosophies of various health care institutions— for-profit hospitals, not-for-profit hospitals; health maintenance organizations (HMO's); evaluation of the adequacy of health care services for labor, the elderly, and the poor under existing health care policies and possible alternatives. Readings, speakers, movies, discussions. A short research paper. Economics 151 or 221 are suggested. *Mr. S. Vander Linde.*

W50 **New York Financial Institutions and Markets.** 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. 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 invest-

ment 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, student presentations, and a written report. Initial information and planning meeting on September 24. Estimated fee of \$400 for travel to and lodging in New York. Prerequisites: 151 or 221 and permission of the instructors. *Mr. K. Kuipers, Mr. D. Pruis.*

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 be an important part of the analysis. Two texts are 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.*

W54 The Retreat of the Welfare State? Democratic, capitalist societies around the world seem to be retreating from their commitment to social welfare and from their attempts to mitigate the effects of the free market on individual lives. Have we entered a new era? Will capitalist societies significantly reduce social insurance programs (unemployment benefits, workman's compensation, retirement programs) and public provision or subsidy of basic goods and services (medical care, housing, transportation, education)? This course will address these questions through an examination of the theory of the welfare state and its practice in Great Britain, West Germany, France, and the United States. The aim is to develop a critical understanding of the role of social welfare in modern capitalism. Students will be expected to participate in class discussions based on assigned readings. There will be a midterm and a final examination, and students will be required to write a short research or analytic paper on a topic relevant to the course. Prerequisite: Economics 151 or 221. *Mr. E. Beversluis.*

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, 221, 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.*

W60 Is Advertising an Appropriate Career for a Christian? An introduction to advertising and advertising careers. An evaluation of advertising as an institution in society and an investigation of advertising as a tool of marketing, and as a process of mass communication that is increasingly used for non-commercial purposes. Students will be assisted in reaching conclusions about its condition, functions, values, and relationship to other subjects that affect career opportunities in the field. An examination of the ethics of advertising's per-

suasive abilities from a Christian perspective. The course includes an introduction to copywriting, advertising design, and layout. Field trips to an advertising agency, a television production studio, and a print media facility. A student paper creating an advertising program. *Mr. J. Brothers.*

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

ENGR W50 Interdisciplinary Problem Solving. *Mr. J. Dodge.*

Education

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

THE VARIOUS TEACHER EDUCATION PROGRAMS are described in detail on pages 51-56. 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 ten course units: 301, 303, 304, 305, 322, 324, 325, 345, 355. The secondary teacher education program requires eight course units: 301, 303, 304, 307, 308, 346 and 356. Students in special education must also complete the elementary education requirements.

Students seeking certification must be admitted to the teacher education program and be in good standing when enrolling in any course in the department.

301 Psychology of Education.* F and S, core. Orientation to the field of psychology.

A study of the learner, the learning process, and the kinds of learning. Should be taken during the junior or senior year. *Staff.*

303 Introduction to Teaching.* F and S. An analysis of the teaching-learning process in the classroom. Includes observation and participation in school activities and a labo-

ratory 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. *Mr. C. Mulder.*

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

308 Reading Strategies: Secondary. F and S, half course. A study of the types and functions of reading programs in secondary schools; a presentation of the responsibilities and qualifications of secondary teachers for applying principles of reading in daily assignments; demonstrations of techniques for meeting the wide range of reading levels found in the average secondary classroom; a review of formal and informal tests of pupil reading levels; and introduction to interpretation of test scores for screening and determining pupil reading needs. Prerequisite: 307. *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. All students except those majoring in mathematics should expect to do their directed teaching during the second semester. Some students in economics, history, physical education, and political science as well as those in mathematics may apply for directed teaching assignments in the fall semester. Prerequisites: good standing in the teacher education program and appropriate recommendations. *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.* S. This course is designed to acquaint students with the basic terminology and theory of assessing specific learning problems. Skill will be developed in the selection, administration, and interpretation of formal and informal, standardized and non-standardized assessment devices for the purpose of determining educational prescriptions. Prerequisite: 216 and 306. *Mr. T. Hoeksema.*

330 Curriculum and Instruction: Mentally Impaired.* F. A study of the curricula, materials, and methods appropriate to the instruction of the mentally impaired. Attention is given to the problems of organizing

classes, making curricular decisions, and selecting methods and materials. A field experience with mentally impaired students is an integral part of this course. Prerequisites: 301, 303, 306, 310; 305 is recommended. *Mr. T. Hoeksema.*

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

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

GRADUATE COURSES

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

512 Theories of Schooling. This course examines psychological, socio-psychological, and educational concepts relevant to an analysis and evaluation of the schooling process. Intellectual skills required for the construction of micro-theory and the interpretation and implementation of research will also be stressed. *Mr. J. Wiersma.*

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

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

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

guidance procedures. Prerequisite: graduate standing and teaching experience. *Staff.*

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

532 Instructional Gaming. Introduction to the theory and practice of simulation and non-simulation gaming for instructional purposes. Both commercially available games and games developed in class will be used and evaluated in terms of their instructional and motivational value at various grade levels and in various subject fields. *Mr. P. Lucasse.*

533 Motivating the Under-Achieving Student. A diagnosis of the learning climate of the classroom as it is affected by the socio-cultural environment of the community and an assessment of the individual factors that affect each student's readiness to learn. Compensatory and motivational teaching materials and styles will be evaluated for their relevance to the under-achieving student. Students will relate this content to a specific classroom situation and to the broader problems of motivation and under-achievement. *Mr. P. Lucasse.*

534 School Administration. A study of the 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 partic-

ular child in a preschool setting as related to the major theories. Prerequisite: Psychology 204. *Miss D. Westra.*

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

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

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

541 Reading Problems in the Secondary Classroom. Half or whole course. This course is designed to help secondary-level teachers recognize the reading problems they are most likely to find in their classrooms and to understand what is needed to correct the problems including the development of separate reading programs. The course includes: a study of the nature of the reading process; a survey of basic reading and study skills; an examination of the reading problems students face when they read typical high school textbooks; a consideration of alternative ways of working with problem readers; a survey of the reading

and study skills materials that are appropriate at this level; the use of the most common formal and informal diagnostic tests with an emphasis on the strengths and weaknesses of each; and the development of a model program for use in a particular high school class. Prerequisite: 307, 322, a year's teaching experience on the secondary level, or the permission of the instructor. *Mrs. K. Blok, Mrs. B. Bosma.*

542 Diagnosis and Remediation of Reading Disabilities. An advanced course for the training of reading specialists who may serve as consultants to classroom teachers and may work individually with severely disabled readers. The course includes a discussion of reading theory, a study of the specialized and general testing tools emphasizing validity and interpretation, the development of prescriptive programs for remediating the problems identified, and the consideration of how to work with regular classroom teachers to implement such programs in a normal classroom. A field experience with a severely disabled reader will involve the development and administration of an appropriate battery of tests, the designing of a remedial program, and creation of an evaluation procedure. Prerequisite: 513, 540, 541, or permission of the instructor. *Mrs. B. Bosma, Miss C. Kass.*

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

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

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

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

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

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

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

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

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

JANUARY 1985 INTERIM

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.*

W11 Teaching Strategies for Grades 7-12. This course will be taught at Rehoboth Christian School, Rehoboth, New Mexico. Because of the unique setting, students will gain multicultural experience while working cooperatively with the classroom teachers. Two major goals are emphasized: (1) to explore the wide variety of teaching strategies appropriate to 7-12 grade pupils in the various content areas, and (2) to develop personal skills using these methods in the actual classroom setting. Housing and meals will be in Rehoboth Christian School facilities. Fee of approximately \$370. Prerequisites: sophomore status and permission of the instructor. Off-campus. *Mr. P. Lucasse.*

W12 Current Educational Approaches—Bane or Boon? Students will examine and evaluate a variety of methods and programs designed to encourage independence, creativity, and individualized learning among elementary school students. Included are Workshop Way, Spectrum, Talents Unlimited, and the Learning Center approach to teaching. Students will observe in classrooms where one or several approaches are used, view films, participate in discussions, conduct library research, report on related topics, and construct a detailed learning center appropriate for classroom use. *Mrs. P. Oostenink.*

W13 Practicum: Language Experiences in Multiethnic Classrooms. This course acquaints students with variations in the language used by elementary pupils, particularly those in inner city schools, and with materials and strategies for helping these pupils acquire "standard English" without discouraging them from using variations of "standard English" where those are socially acceptable. The major focus of the course is on designing language encounters for use with these pupils, planning lessons for teaching communication skills to these pupils, and tutoring. The course includes lectures, demonstrations, films, guest speakers, and observations in multi-ethnic classrooms. Oral and written reports of assigned readings, written reports of class-

room observations, lesson plans, and evaluative reports of tutoring sessions are required. *Mrs. K. Blok.*

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. There will be two seminars on campus: one in December for orientation and practice of necessary skills and a summarizing seminar in February. Fee of \$50 for room and board. Transportation not included. Prerequisite: permission of the coordinator. Off-campus. *Mr. P. Lucasse.*

W53 Curriculum and Methods for Multi-grade Classrooms. Students will be placed in an off-campus multigrade classroom where, because of the spread of pupil ability, they will be able to use individualization teaching techniques and peer tutoring. Special attention is given to management skills for both curriculum and scheduling in the class. The course includes lesson planning, tutoring, teaching, required readings, and maintaining a daily journal. The classroom teacher and principal provide daily supervision and weekly seminars. Mr. Lucasse conducts planning seminars before the interim and a concluding seminar during the first week of the second semester. Fee of \$50 for room and board. Transportation not included. 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 on campus and in local junior high or middle schools. Students will observe pupils and teachers. They will also observe various teaching styles. There will be opportunity to plan and teach lessons. The course includes textbook readings, readings on

teaching styles, and lectures. Prerequisites: sophomore status and written permission of the instructor. Apply by October 31. *Mr. C. Mulder.*

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. Class discussions, quizzes, oral presentations and

written analyses of instructional materials, and evaluation of at least one children's book about people with disabilities are required. *Mr. T. Hoeksema*

W57 Teaching Reading to Anglos and Haitians at Lake Worth, Florida. This course provides experiences for elementary teacher education students in multiethnic settings. Participants will teach reading lessons in the Lake Worth Christian School in the morning and tutor young adult Haitians in biweekly evening sessions. Seminars address the special needs of bilingual learners and the classroom implications for student teachers who will be teaching students from diverse cultures and language backgrounds. Lessons will be analyzed and evaluated. Field trips include visits to area schools (i.e. Kendall Christian, Miami) serving Cuban, Haitian, and American Black migrant children. Fee of approximately \$400. Prerequisites: 322, 324-325, and/or permission of the instructor. Off-campus. *Mrs. B. Bosma.*

Engineering

Professors J. Bosscher (chairman), L. Van Poolen
Associate Professor M. Vander Wal
Assistant Professors R. Hoeksema, D. Medema
Instructor †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 68.

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. An engineering project is assigned to further enhance creative skills in concept design. Prerequisites: 101, Mathematics 161, and enrollment in Computer Science 141. *Staff.*

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

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

208 Network Analysis I. S. Techniques for the analysis of analog and digital electronic circuits. Series/parallel reduction, classical loop and nodal methods, source transformations, Thevenin/Norton's theorems, applied to direct-current and sinusoidal steady state cases. Independent and dependent sources, with the operational amplifier as an important case. Natural and forced response of single transients. A study of logic circuits and operations with an introduction to combinational and sequential logic. Students take either 206 or 208. Prerequisite: completion or concurrent registration in Mathematics 231. *Staff.*

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

301 Engineering Electromagnetics. F. A study of the laws and engineering applications of static and dynamic electric and magnetic fields in various conductive, dielectric, and magnetic materials and under various boundary conditions. Calculation of capacitance and inductance; Poisson and Laplace equations. Time-varying fields and Maxwell's equations, proceeding to the uniform plane wave. Transmission-line equations, parameters, graphical methods. An introduction to radiation and antennas. Prerequisites: Physics 225, Mathematics 333. *Staff.*

304 Fundamentals of Digital Systems. S. An introduction to the fundamental principles of logic design in digital systems. Top-

ics include: Boolean algebra, analysis and synthesis of combinational and sequential networks, register transfer language, micro-operational description and applications to computer design, computer organization and programming, and an introduction to microprocessors. Laboratory work will include logic design, programming, and interfacing of a micro-computer as an example of a complete digital system. Prerequisites: 206 or 208 and CPSC 141. (Previously 385.) *Staff*.

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

307 Network Analysis II. F. 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: 208 and Mathematics 231. (Previously 322.) *Staff*.

309 Fluid Mechanics. F. Basic properties of real and ideal fluids. Fluid statics. Lagrangian and Eulerian descriptions of flow. Continuity, energy, and linear momentum equations in differential and integral forms for incompressible flows. One-dimensional flow analysis. Introduction to boundary layer theory. Dimensional analysis and laboratory experiments utilized to determine significant flow parameters. Computer analysis is utilized. Prerequisites: 202 and Mathematics 231. *Mr. 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. Prerequisites: Mathematics 231 and Physics 126 and 186. *Mr. L. Van Poolen*.

311 Electronic Devices and Circuits. F. A study of the characteristics and qualitative internal action of commonly used micro-electronic devices for discrete and inte-

grated circuits, such as diodes, junction field-effect transistors (JFET's), metal-oxide semi-conductors FET's (MOSFET'S), and bipolar junction transistors (BJT's). Application of these devices in a variety of circuits, operational amplifiers, non-linear circuit applications of diodes, digital integrated circuits such as counters and A/D, D/A converters, basic amplifier circuits. Laboratory exercises are used to illustrate concepts. Prerequisite: 208. *Staff*.

312 Principles of Analog Computation. S, half course. An introduction to the theory and techniques of analog computation, including computer solutions for representative forms of linear and non-linear differential equations. Prerequisite: Mathematics 231 or permission of the instructor. Not offered 1984–85.

313 Soil Mechanics and Foundation Design. F. Soils studied as engineering materials whose behavior is dependent upon soil types, index properties, and soil moisture conditions. The scope of the course includes soil structures, index properties, soil identification, permeability, compressibility and consolidation, soil testing, static and dynamic pressures, effective pressures, and foundation design. Laboratory experiments are used to emphasize principles. Prerequisite: 305. *Mr. R. Hoeksema*.

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

315 Control Systems. F. An introduction to linear feedback control theory, including transient and frequency response; stability; systems performance; control modes and compensation methods. Hydraulic, electrical, pneumatic, and inertial components and systems are investigated and employed. Prerequisite: Mathematics 231. (Previously 318.) *Staff*.

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

317 Engineering Instrumentation. F. An introductory study of engineering measurement and instrumentation theory and technique. Types of systems and their response in the time and frequency domains are studied. The characteristics and uses of transducers to measure pressure, acceleration, strain, voltage, and other physical quantities are emphasized with attention on the usefulness, accuracy, and reliability of physical measurements. Electronic signal conditioning and digital techniques are covered. Laboratory work and instrumentation project emphasize actual applications. Prerequisite: 206 or 311. *Mr. J. Bosscher.*

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

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

325 Digital Circuits and Systems Design F. A study of the techniques for analysis and synthesis of combinational, iterative, and synchronous sequential logic circuits. The student is introduced to digital logic families (TTL, ECL, ILL, MOSFET, CMOS logic), electrical characteristics of combinational and sequential integrated logic packages, A/D and D/A conversion, control units, bus standards, micro-processors, static/dynamic memory units (RAM, ROM, PROM, EPROM), asynchronous logic, and interfacing. Laboratory experiences emphasize principles and design of digital systems. Prerequisites: 304 and 307. *Staff.*

326 Structural Analysis. S. A study of beams, two-dimensional trusses, and rigid frames. Course work includes calculation of shear forces and bending moments due to fixed and moving loads, calculation of deflection, analysis of moving loads using in-

fluence lines, and the analysis of statically indeterminate structures. The course also includes an introduction to matrix methods in structural analysis. Prerequisite: 305. *Mr. M. Vander Wal.*

327 Structural Design F. Application of principles of mechanics of solids and structural analysis to the design of structural members made of steel or reinforced concrete. Allowable stress and ultimate strength design procedures are studied along with the AISC specification for the design, fabrication and erection of structural steel for buildings and the ACI building code requirements for reinforced concrete. Computer techniques are used as aids to analysis and design. Prerequisite: 326. *Mr. M. Vander Wal.*

328 Advanced Thermodynamics. S. Application of basic thermodynamic principles to the analysis of power and refrigeration cycles, air conditioning processes, chemical equilibrium, combustion, and compressible flow of fluids. Laboratory exercises are utilized to emphasize principles. Prerequisites: 309 and 310. *Mr. L. Van Poolen.*

329 Machine Design. F. Application of engineering mechanics, materials, and manufacturing concepts to the analysis and design of mechanical elements and systems. Computer techniques are used as aids to analysis and design. Prerequisites: 305 and 324. *Mr. L. Van Poolen.*

330 Electronic Circuits Analysis and Design. S. A study of electronic devices in analog and digital circuits. Topics include: device modeling, biasing, frequency response, tuned circuits, modulation/demodulation, feedback principles, Bode plots, operational amplifier, oscillators, single and multi-stage amplifiers, analog integrated circuits and filters. SPICE and other computer-aided design tools are used in the course. Students will assemble and test circuits in a laboratory. Prerequisites: 307 and 311. *Staff.*

336 Advanced Circuit Design. S. Analysis and design of integrated electronic circuits. A study of untuned and tuned voltage and power amplifiers, operational amplifiers used in a variety of applications, analog filter design, an introduction to digital filtering, modulators/demodulators, phase-locked loops, IC power management circuits, microprocessors as components in programmed logic, control systems, and filters. Emphasis is on realization of design speci-

cations using commercially available integrated-circuit packages. Laboratory work in design. Prerequisites: 325 and 330. This course is subject to the approval of the faculty. *Staff.*

340 Design Project. S. This course is subject to the approval of the faculty. *Staff.*

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

JANUARY 1985 INTERIM

W50 Interdisciplinary Problem Solving. This course requires the class to solve a large-scale, real-world, social-technical problem, that of designing and creating off-season employment for the agricultural laborers in the Mississippi Delta. Corrective action proposed will involve legal, technical, administrative, sociological, and ethical decision-making with special consultants available to support the needs of the class. Formal approaches to decision-making will be presented and applied to project problems using *Decision-Making* by Hill and others as models. The class will prepare tentative approaches to the problem in the first two weeks of class and will attempt to test, refine, or redo the proposals on site in Mis-

issippi during the final week of the course. A day by day log will be required of each student and a full-scale class report proposing a course or courses of action for attacking the problems will be generated. Prerequisite: junior engineering standing or permission of the instructor. *Mr. J. Bosscher, Mr. J. Dodge.*

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.*

W53 A Special Topic in Electrical Engineering. *Mr. D. Medema.*

W54 A Special Topic in Civil/Mechanical Engineering. *Mr. R. Hoeksema.*

315 Control Systems Analysis. *Mr. K. Peterson.*

IDIS W54 Philosophy of Technology. *Mr. L. Van Poolen.*

English

*Professors H. Baron, E. Ericson (acting chairman), G. Harper, H. 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 W. Vande Kopple, J. Vanden Bosch

Assistant Professors D. Hettinga, R. Verbrugge

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 emphasis on their formal qualities and cultural significance. The course aims to enhance the student's understanding of fiction, poetry, and drama. *Staff.*

202 A Survey of English Literature. F. A comprehensive study of English literature from Chaucer through Johnson. The course is conducted intensively in the major authors rather than inclusively. *Staff.*

203 A Survey of English Literature. S. A continuation of 202. The course proceeds from Wordsworth through Eliot. *Staff.*

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

220 World Literature.* F and S. A course of selected readings and lectures in the literature of the European continent, ancient and modern, with special emphasis on the

period from Dante to Solzhenitsyn, and with particular attention to significant forms and themes. *Mr. J. Vanden Bosch, Mr. S. Van Der Weele.*

235 Practice in Composition. F and S. A second course in rhetoric and composition designed for students who wish additional practice in basic writing skills but who do not qualify for 332. Includes readings, a review of basic principles of rhetoric, and extensive practice in writing a variety of short papers. *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.* Not offered 1984-85.

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.* Not offered 1984-85.

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. D. Hettinga.*

295 **Studies in Literature: The Tragicomic Vision.** S. A study of the twentieth-century tragicomic novel with background study in its literary development. Principal authors include Sophocles, Shakespeare, and Oscar Wilde as precursors, and Peter De Vries, Ken Kesey, C.S. Lewis, John Steinbeck, and Rudolfo Anaya as modern examples. *Mr. J. H. Timmerman.*

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.* Not offered 1984-85.

303 **Shakespeare.*** F and S. A study of the major works of William Shakespeare. *Staff.*

304 **Literature of the English Renaissance.** F. A study of the poetry and of some prose of the sixteenth century and of the drama of the sixteenth and early seventeenth centuries exclusive of Shakespeare. *Mr. S. Van Der Weele.*

305 **English Literature of the Seventeenth Century.*** F. A study of poetry and prose in England from 1600 to 1660 with emphasis on the religious lyric, especially the poetry of Donne and Herbert. *Mr. E. Ericson.*

306 **Milton.*** S. An intensive study of the poetry and prose of John Milton. *Mrs. C. Otten.*

307 **English Literature of the Eighteenth Century.*** S. A study of the Restoration author John Dryden, and of English poetry and prose in the eighteenth century, with emphasis on Addison, Pope, Swift, and Johnson. Gray, Thomson, Collins, and Cowper will receive attention as poets of "the Age of Sensibility." *Mr. S. Van Der Weele.*

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.* Not offered 1984-85.

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.* Not offered 1984-85.

310 **Literature of the United States I.*** F. A survey of the literary works of the colonial and revolutionary periods. Intensive studies of the major romantic writers from 1820 to the Civil War. *Staff.*

311 **Literature of the United States II.*** S. A continuation of 310. A study of the important writings of the post Civil War period, including the realistic and naturalistic movements, the development of modernism in poetry and fiction, and the achievements of the post-World War I generation in the 1920's and 1930's. *Staff.*

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

314 **The English Novel.*** F. 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. *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. *Staff.*

321 **Modern Drama.*** F. Plays by the following authors are read and discussed in relation to the major movements in modern drama: Ibsen, Chekhov, Shaw, Brecht, Pirandello, Beckett, O'Neill, Miller, Williams, Albee, and Pinter. *Miss M. A. Walters.*

325 **Children's Literature.** F and S. A study of children's literature, including intensive reading of the best of this literature and the application of literary standards to what is read. *Mrs. C. Otten.*

326 Adolescent Literature.* F. A study of adolescent literature, including intensive reading in the best of this literature and application of literary standards to the reading. *Mr. H. Baron.*

329 Linguistics.* F. 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. *Mr. C. Walhout.* Not offered 1984-85.

332 Advanced Composition. S. A course in advanced expository writing. Readings in the formal essay, together with writing in such types of composition as the formal and informal essay, the opinion editorial, the informative and feature article, and the book review. Open to students who have earned at least a B (3.0) in 100. *Mr. S. Vander 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.* Not offered 1984-85.

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 evalua-

tion. 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. S. Further work in feature stories, investigative reporting, and in adapting material for radio and television. *D. Hettinga.*

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

395 Seminar.* F. A study of eight to ten of the major works of William Faulkner. Emphasis is on thematic and social as well as on aesthetic significance. *Mr. C. Walhout.*

GRADUATE COURSES

510 Literature for the Adolescent. A survey and evaluation of adolescent literature, an examination of reference tools and approaches to the teaching of adolescent literature, a consideration of criteria for selection, and a critical study of several representative works. *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. S. A course in the principles and practice of writing, including the study of techniques appropriate for teaching elementary and middle school students to write well. *Staff.*

580 Principles, Practices, and Programs in Secondary English Education. S. An advanced methods course for those teachers working at the junior high school or high school level. It involves general principles, materials, and pedagogical practices with emphasis on current trends and developing problems. Each student will make a special study of a given area of language, composition, or literature. *Staff.*

581 Methods and Materials in the Language Arts. S. A study of programs and techniques of effective teaching of language arts in the elementary school plus a review of current materials in relationship to improvement of instruction. *Staff.*

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

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

JANUARY 1985 INTERIM

W11 The Great Depression and You. An examination of the Depression of 1929-1937 using the literature, films, still photographs, historical materials, and interviews with survivors. Students will attempt to identify with the feelings and outlooks of persons growing up in that traumatic period or the world's history, will become aware of the effect of that environment on survivors and descendants of survivors, and will make judgments on the current spiritual state of persons living in abundance in the very same communities with persons living in poverty and hopelessness similar to that of the Depression. Supplemental readings in the Bible (Isaiah, Ecclesiastes, James), in newspapers and magazines of the era, and a field trip or two to communities which show scars of that time. Lectures, demonstrations, and interviews. Reading list will be available in the English Department office in December. *Mr. G. Harper.*

W12 Literary Views on Love and Marriage. An examination of various literary works—short stories, poems, plays, and novels on the subject of love and marriage. Starting with several pertinent biblical and classical statements on divine love and human love, students will consider varying representations on the subject, past and present, comic and serious. Some of the au-

thors to be considered are: Plato, Erasmus, Tolstoy, Robert Frost, John Updike, Tillie Olson, and Walker Percy. For the first half of the interim, the students will work from a general reading list; for the latter part, students will be encouraged to read an author of their own choice. The course includes lectures, discussions, films, quizzes, and a paper. A reading list will be available in the English Department office during December. *Mrs. R. Verbrugge.*

W13 Shakespeare's Greatest Hits. A study of seven of Shakespeare's most popular plays. The goal of the course is the understanding and enjoyment of Shakespeare both on the page and in performance. Lectures, films, recordings, discussions, reports, and possibly a trip to a performance. *Miss M. A. Walters.*

W14 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.*

W16 The Black American Experience Through Literature. An exploration of the uniqueness of the Black American experience as interpreted by its most gifted writers. Students will read and discuss some of the greatest black achievements in poetry, fiction, and autobiography. Special emphasis on classic autobiographies by Booker T. Washington, W.E.B. Dubois, Richard Wright, and James Baldwin as well as on more recent works by Malcolm X, Eldridge Cleaver, Toni Morrison, and Alice Walker. Quizzes, paper, and a final examination. *Mr. P. Oppewall.*

W17 Seven Poems of Seven Centuries. Each era or century has produced at least one literary landmark, a poem which embodies with varying degrees of completeness the thought and sensibility of that period. This course examines a series of such poems, in whole or in part, which convey in some fashion the ideals and vision of

the era in which they were written. The class will take note of the varying literary structures and artistic conventions of these works and identify the themes common to the works, as well as note the variations on those themes. Tentative selections: *Beowulf*, *The Song of Roland*, *Dr. Faustus*, *Paradise Lost*, Pope's *Essay on Man*, Tennyson's *In Memoriam*, Wordsworth's *Prelude*, T.S. Eliot's *The Waste Land*. Oral reports and a brief paper. A course in English or American literature is desirable. Mr. S. Vander Weele.

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. Students will read all of her significant fiction. In addition 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. 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. The basic discussion method is balanced by lectures and summary critical analyses by the instructor. Prerequisite: 100. Miss H. Ten Harnsel.

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. The instructor's *More Than the Ear Discovers*, an analysis of each play, is used as the text and substitutes for lectures. Class time is spent presenting papers and discussing them. Two papers, one an analysis and evaluation of a play and the other a response to a paper, are required. Students enrolled in the class may try out for a part in Fry's *Thor*, *With Angels*, a play about the coming of the Gospel to England. Prerequisite: at least one English course beyond 100. Mr. S. Wiersma.

W56 Journalism or Fiction: Ernest Hemingway, Norman Mailer, Joan Didion, and Tom Wolfe. Are novels ever more accurate than news? Is the best news fictional? These and other questions are answered as the class explores the similarities and differences between journalism and fiction by

reading some of the best writers in both. Classroom discussion covers topics ranging from the American expatriates of the 1920's to the counterculture of the 1960's, from World War I to the wars in Vietnam and El Salvador. The course includes discussions, lectures, films, and quizzes. Two short papers are required. The course involves a fair amount of reading, some of which should begin before the interim. A reading list will be available in the English Department office before Christmas. Students who wish to apply this course to their minor in journalism are expected to do additional writing and should notify the instructor in December. Prerequisite: 100. Mr. D. Hettinga.

W57 Grammar for Teachers and Others. This course is especially useful for students who plan to teach grammar and writing and for students who need a thorough review of traditional grammar. The course includes the following strands: (1) a review of traditional grammar; (2) an examination of the history and development of the system of traditional grammar; and (3) a consideration of the usefulness of grammar for the teaching of writing. Daily assignments, reports, projects, lectures, and discussions. Prerequisite: English 100. Mr. J. Vanden Bosch, Mr. W. Vande Kopple.

W59 Solzhenitsyn and Bulgakov. This course focuses on two Russian writers who have lived and worked during the Soviet period of Russian history. Solzhenitsyn receives somewhat more than half of the time; Bulgakov, less than half. Tentative plans call for reading *The White Guard* and *The Master and Margarita* by Bulgakov; *One Day in the Life of Ivan Denisovich*, *The First Circle*, *August 1914*, *A World Split Apart*, and parts of *The Gulag Archipelago* by Solzhenitsyn. Students are strongly urged to do some of the reading before the course begins. The class will discuss these books. There will be a film and a videotape or two. A paper is required. Reading list will be available in the English Department office before Christmas. Prerequisite: a college course in literature or the approval of the instructor. Mr. E. Ericson.

W60 How Do We Read Poetry? This is a course on the processes and techniques of poetry. It will take the form of a close examination of a range of poems selected to represent achievement of English poetry from the seventeenth century to the present day. Although its aim will be to highlight questions about the nature of critical apprecia-

tion, it will do so by a detailed analysis of aspects of poetic technique as these affect problems of interpretation and evaluation. The emphasis will be on close readings of individual texts. The poems will be provided in photocopied form, enabling students to read and think about each poem a day or so ahead. Occasionally a poem will be approached for the first time in class. Among the considerations raised will be the art, as an act of critical interpretation, of reading the poem aloud—of asking, as we ask of a musical score, 'How does it go?' The initial analysis in each case will be made by the instructor, but this will be aimed at stimulating individual responses by course members, in a general exchange of ideas and opinions on the questions raised. Thus an important objective will be to see how easy or otherwise it is to establish general agreement as to a poem's meaning or merits. Is literary criticism an objective art? Or can it be allowed to be simply a case of a

reader's subjective opinions? The instructor will naturally have certain views. But the course title is a question—'How do we read poetry?'. *Mr. W. Davies.*

W61 Good and Beautiful Books for Children. This course introduces students to a wide range of children's books appropriate for the elementary classroom and the home, particularly books which correlate the illustrations with the text. Students will read books by some of the best authors and illustrators such as Van Allsburg, Spier, Steig, Potter, Rackham, Sendak, McDermott, Milne-Shepard, Willard-Provensen, Lewis-Hague, White-Williams, and Jarrell-Burkert. Lectures, films, discussions, reports, book evaluations, and possibly a guest author or illustrator. Not open to those who took W53 in 1984. Prerequisite: 100. *Mrs. P. Tigchelaar.*

IDIS W52 Interim in Friesland. *Mr. H. Baron.*

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, and four additional 300-level courses. If approved in advance, one French interim course will count towards the major. Approved courses completed in a junior year program in France may be applied to the program of concentration. The six-course minor program must include 215, 216, 217, and 218. Nine college-level courses in French are required for a teacher-education major and six for a teacher education minor. Students in this program must pass a French-language test prior to the teaching internship offered during the spring semester. The teacher education adviser is Mrs. B. Carvill. Students beginning their study of French in college should consult the chairman early in their college career. Cognates in a second language, art (231, 232), English or American literature (202, 203, 212, 303), and history (220) are recommended.

All courses above 102 meet core requirements; 217, 218, 311, 312, 313, 371, and 372 meet core requirements in the fine arts.

LANGUAGE

101 Elementary French. F. An introductory course in the comprehension and use of spoken and written French. *Mrs. C.-M. Baldwin.*

102 Elementary French. S. Continuation of 101. *Mrs. C. M. Baldwin.*

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

201 Intermediate French. F. Further training in spoken and written French, study of the structure of the language, and practice in listening and reading. *Mr. A. Otten.*

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

215 Advanced Conversation. F. This course is designed to develop advanced oral comprehension skills as well as advanced competence in spoken French through exercises, drills, conversation in class and in small groups. Prerequisite: 123, 202, or the equivalent. *Mrs. C.-M. Baldwin.*

216 Advanced Grammar and Composition. S. Systematic study of advanced gram-

mar and composition. Prerequisite: 123, 202, or the equivalent. *Mr. A. Otten.*

315 French Phonetics and Oral Comprehension F, half course. This course is for the advanced student who wishes to improve fluency in and knowledge of the language, who wants to prepare for the teaching of French, or for graduate study. Major emphasis: descriptive and corrective phonetics, dictation. Prospective teachers should take this course in their junior or senior year. Prerequisite: 216 or permission of the instructor. *Mr. A. Otten.*

316 French Composition and Oral Comprehension. S, half course. This course is for the advanced student who wishes to improve fluency in and knowledge of the language, who wants to prepare for the teaching of French, or for graduate study. Major emphasis: advanced grammar, oral comprehension, stylistics, and *la dissertation*. Prospective teachers should take this course in their junior or senior year. Prerequisite: 216 or permission of the instructor. *Mrs. C.-M. Baldwin.*

LITERATURE

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

217 Introduction to French Literature. F. An introductory study of important texts illustrating the genres and major themes of French literature. Conducted in French. *Mr. A. Otten.*

218 Introduction to French Literature. S. A survey of the development of French literature from the Middle Ages to the present. Conducted in French. *Mrs. C.-M. Baldwin.*

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

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.* Not offered 1984-85.

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 poets of the modern period, beginning with Baudelaire. Conducted in French. Not offered 1984-85.

314 **French Prose.*** S. A study of major writers expressing French thought, spirit, and sensibility in nonfiction from Calvin to the present. Special attention is paid to the tradition of the *moralistes*. Conducted in French. Not offered 1984-85.

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 1984-85.

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 1984-85.

372 **French Civilization.** F. A study of French history and geography, with emphasis on the major political, social, and artistic movements of the past and present. Designed to enhance the student's knowledge of French culture and to enrich his literary studies. Conducted in French. *Mrs. C. Galouët-Schutter.*

JANUARY 1985 INTERIM

W50 **French Interim Abroad.** The first two weeks of the interim are spent in Paris, followed by a group excursion to Avignon in southern France, where students will live in French homes for a week to ten days. Activities include language study, lectures on French civilization, visits to museums, monuments, churches, concerts, and the theater. One week will be devoted to independent study and travel prior to returning to the United States. Fee of approximately \$1,450. Prerequisites: 201 or its equivalent and permission of the instructor. Off-campus. *Mr. A. Otten.*

W52 **Reflection of a People: Modern Québec Literature.** One of the most outstanding features of recent French-Canadian culture has been the emergence and growth of a distinctly *quebécois* literature which, ever since the late forties, has developed both as a valid art form and as an important aspect of the French-Canadian mind and civilization. In turn, it has cultivated French-Canadian self-awareness and self-esteem. Students study the history and the present state of that literature and will examine closely the culture from which it stems. Readings, lectures, discussions, and films. Conducted in French. A reading list will be available in the French Department office in December. Prerequisite: 215 or 217 or permission of the instructor. *Mrs. C.-M. Baldwin.*

122 **Intermediate French.** From the sequence 121-122-123. French 122 is equivalent to one semester of language study. Prerequisite: 121 or its equivalent. *Mrs. E. Monsma.*

Geology, geography, environmental studies

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

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

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

The recommended program for students who wish to pursue a career or graduate study in geology consists of 151 or 105, 152, 201, 202, 212, 301, 302, 311, 313, either 395 or 396, and field camp, with cognates including Chemistry 103 and 104, Physics 123, 124, 181, 182, and Mathematics 161 and 162.

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

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

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

Programs in geography. Programs and courses in geography are offered as electives for students who wish to broaden their social science knowledge through the study of human ecology and locational analysis. A minor concentration in geography requires Geography 101, 210, 220, Geology 100, and Environmental Studies 201, plus an additional course approved by the adviser. This is the appropriate minor for secondary teacher education.

Programs in environmental studies. Courses in environmental studies are offered to those students interested in studying a broad range of environmental problems and issues at the local, national, and global levels. Because the study of such issues is truly interdisciplinary in scope, environmental studies courses are suitable for students from the humanities, the social sciences, and the natural sciences. They may be taken singly as electives to enrich a program of study or as a supplementary concentration to a major. The supplementary concentration consists of three required courses, Environmental Studies 201, 202, and 395; two courses chosen with the approval of the program adviser from among: Biology 216

or 222, 240S, 351, Chemistry 110, Environmental Studies 385, Economics 332, Geography 101, 210, Geology 100 or 103 or 105, 311, Sociology 308, or approved interim courses; and one additional elective approved by the adviser.

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 con-

centration. 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 devel-

op a geographic perspective on world and life. Principal topics for study include the physical earth, human ecology, and the spatial organization of society. *Mr. H. Aay.*

210 Introduction to Cultural Geography.*

F. An examination of the interactions between culture and nature in pre-agricultural, agricultural, and urban-industrial societies. The course explores the origins, character, content, organization, perceptions, and meanings of cultural landscapes, past and present, large and small. Prerequisite: 101. *Mr. H. Aay.*

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.* Not offered 1984-85.

GEOLOGY

100 Earth Science. F.

An introductory study of four aspects of the earth: earth as a planet in the solar system; the structure and composition of earth's crust and interior; earth's atmosphere and weather processes; and the oceans. Laboratory. *Mr. C. Menninga.* Not offered 1984-85.

103 Man and the Earth. F and S, core.

An introduction to geology. A study of the materials and processes of the earth leading to a responsible Christian appreciation for and use of the earth. The principles of geology are explored through a survey of the history of the ideas about the Earth. Basic insights of chemistry, biology, physics, and mathematics are applied to the solution of practical geological problems, with emphasis on such geological hazards as earthquakes, volcanic eruptions, floods, marine erosion, and mass wasting and on the nature and distribution of fossil fuels, metals, ground water, and other mineral resources. Laboratory. *Mr. J. Clark, Mr. C. Menninga.*

105 Introductory Field Geology. Summer.

An introduction to geology through intensive field study. Students learn the basic principles of geology and become familiar with important earth materials and processes through firsthand observation of such features as the Cascade Range volcanoes, the Pacific Ocean coast, the Klamath

Mountains, and the rivers and lakes of southern Oregon. Students live for about three weeks at a base camp located east of Ashland, Oregon, near the crest of the Cascades. Not open to students who have taken 103 or 151. Prerequisite: permission of instructor. *Mr. D. Young.* Not offered 1984-85.

151 Physical Geology. F.

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

152 Historical Geology. S, core.

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

201 Mineralogy.* F.

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

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. *Staff.*

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, 105 or 151 plus Chemistry 104, or permission of the instructor. Not offered 1984-85.

311 Geomorphology.* F. The investigation of landforms and the processes which cause them. This course studies the erosional and depositional features resulting from rivers, glaciers, and wind, as well as coastal, gravitational, and weathering processes. Landforms are described and classified from field observations, topographic maps, and aerial photographs. Explanations of the landforms are offered through quantitative modeling of the processes. Laboratory, field trips. Prerequisite: 151. *Mr. J. Clark.* Not offered 1984-85.

313 Paleontology.* F. A study of organisms that once lived on the Earth. Includes study of the processes of fossilization and methods of discovering the structure, habitat, and relationships of those organisms, and a review of their distribution and life history. A broad spectrum of organisms is studied with emphasis on invertebrate animals. Prerequisite: 151 or Biology 202. *Mr. C. Menninga.*

314 Stratigraphy.* S. The fundamental principles of the classification and interpretation of rock strata are illustrated through intensive study of classic stratigraphic successions in the central Appalachians, the Colorado Plateau, Wyoming, and the British Isles. Laboratory, field trips. Prerequisite: 152. *Mr. D. Young.* Not offered 1984-85.

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.* Not offered 1984-85.

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 geo-

logical 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 1985 INTERIM

W52 Quantitative Geology. In recent years quantitative methods have greatly in-

creased in importance in the Earth sciences. Many geology majors are unaware of how useful statistical and numerical methods are in the field of geology. This course exposes the student to the most widely used quantitative techniques. Emphasis is placed not so much on the theory behind the techniques as upon the uses and abuses in the application of statistics and numerical models to actual geological problems. Course work includes lectures, quizzes, problem sets, a term project, and some computer use though computer literacy is not a prerequisite. Prerequisites: one semester of calculus and any introductory geology course. May be applied to a major in geology. *Mr. J. Clark.*

IDIS W12 Our Daily Bread: Agriculture, Food and World Hunger. *Mr. H. Aay.*

German

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

PROGRAMS FOR STUDENTS wishing to major in German are worked out for them individually by departmental advisers who should be consulted early. To be eligible a student must have completed at least two courses in German with a minimum grade of C (2.0) and must have completed 102, 122, or the equivalent.

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

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

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

LANGUAGE

101 Elementary German. F. A beginner's course stressing both written and spoken

German and including an introduction to German culture. *Staff.*

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

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

201 **Intermediate German.** F, core. Grammar review, West and East German *Landeskunde*, readings, and continued emphasis on the development of spoken and written German. Prerequisite: 102 or four units (two years) of high school German. *Staff.*

202 **Intermediate German.** S, core. Continuation of 201. Prerequisite: 201. *Staff.*

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

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. *Mrs. B. Carvill, 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. Not offered 1984-85.

306 **Literature of the German Democratic Republic.** F, even years. A survey of East German literature from its beginnings in the late 1940's to the present. The course includes an analysis of the relationship of the literature to the literary theories of Socialist Realism as well as to the political and social structure of the German Democratic Republic. Prerequisites: 217, 218, or permission of the instructor. *Mr. W. Bratt.*

307 **Early Twentieth Century Literature.*** F, odd years. Selected readings in German and Austrian literature from 1890 to 1940, with special emphasis on the works of Schnitzler, Mann, Kafka, Brecht, and Hesse. Lectures, discussions, and assigned papers. Prerequisite: 217, 218, or permission of the instructor. *Mrs. B. Carvill.*

308 **Postwar Literature.*** S, odd years. Readings in German literature from 1945 to the present from such writers as Andersch, Frisch, Böll, and Grass. Lectures, discussions, and assigned papers. Prerequisite: 217, 218, or permission of the instructor. *Mrs. B. Carvill.*

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

395 **Seminar.***

CIVILIZATION

361 **Introduction to Modern German Culture.** F and S. A survey of the German

cultural tradition of the past two centuries as it finds expression in the various arts, with particular emphasis on representative works of literature in translation. Open to all students, but planned primarily for those in designated preprofessional courses whose programs include the "foreign culture" option. No knowledge of German is required. *Mr. W. Bratt.*

JANUARY 1985 INTERIM

W50 German Interim Abroad. This course is approximately five weeks in length and is conducted in West and East Germany. A brief tour through Northern Germany is followed by ten days of study in Husum, Schleswig-Holstein. A second study-phase of the course is conducted in West Berlin, and is followed by a tour of East Germany. Students will live with German families to increase their exposure to the language and culture. Lectures, visits, to museums, the opera, and other cultural centers. A daily journal is required. Course participants will be given approximately one week for independent study and travel prior to returning to the United States. Fee of approximately \$1,175. Prerequisites: 215 or its equivalent and permission of the instructor. Satisfies departmental concentrations. Off-campus. *Mrs. B. Carvill.*

W51 The Play Behind the (Iron) Curtain. The central concern of this course is the preparation for public performance of a comedy written by Rudi Strahl, East Germany's most popular and prolific contemporary playwright. Approximately one half of each day will be spent working on rehearsals and the mastery of the German text, while the other half day will be devoted to a variety of systematic background studies whose aim is to help the students understand the context of the play and its socio-

critical aspects. Among the areas of East German life investigated are its political climate, educational system, church life, and economic structures, as well as the satisfactions and irritants informing the day-to-day existence of the typical East German citizen. These background studies are done by means of reports, lectures, films, and discussions. The play will be presented at the end of the course. Prerequisite: 201 or permission of the instructor. *Mrs. M. Buteyn-Kromminga.*

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. *Mr. W. Bratt.*

IDIS W19 Folklore of Foreign Lands. *Mr. C. Hegewald.*

Greek

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

History

Professors R. Bolt, H. Brinks, B. De Vries (chairman), D. Diephouse, S. Greydanus, G. Marsden, H. Rienstra, †F. Roberts, D. Van Kley, E. Van Kley, R. Wells
Assistant Professor S. Pikaart
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 102 Honors; any other regular course in the department will satisfy the additional requirements in the contextual disciplines. Upperclass students who have not completed their core requirements in history should discuss with the chairman alternative ways of satisfying the requirement.

AREA SURVEYS

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

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

102 **Honors Western Civilization.** F, core. A study of revolution and revolutionaries in Western Civilization since 1500. Using case studies of various types of revolution (political, social, economic, cultural), the course will examine changing definitions of revolution and explore the historical impact of such figures as Calvin, Marx, and Freud. Lectures, discussion of assigned readings, and the preparation of several papers; no tests. *Mr. D. Diephouse.*

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

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

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

204 **Modern East Asia.*** S. A study of the transformation of East Asian society resulting from the intrusion of the West, from the

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

205 **History and Society in West Africa to 1800.*** F. A wide-ranging survey of prominent themes encompassing several centuries of West African history. The principal aim is to introduce students to some of the main currents of West African history and to provide insights into its society and culture. Themes include: pre-colonial times; culture, commerce, and state building; the trans-Saharan and Atlantic trade; Islam and the socio-political changes it brought; the Atlantic slave trade. Not offered 1984-85.

206 **History and Society in West Africa since 1800.*** S. An examination of the historical, political, and economic development of West Africa since 1800. The course examines European imperialism in the late nineteenth and twentieth centuries, the development of African nationalism, resistance and struggle for independence, neo-colonialism, and the origins of contemporary social, economic, and political problems in the new states of the area. *Mr. S. Greydamus.*

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.*** S. A survey of English history including the Anglo-Saxon background; the medieval intellectual, religious, and constitutional developments; the Tudor and Stuart religious and political revolutions; the emergence of Great Britain as a world power; the growth of social, eco-

conomic, 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 1984-85.

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 1984-85.

221 **The Netherlands.* S.** An introduction to the history of the Netherlands from Medieval times to the twentieth century, with an emphasis on Dutch colonization and the history of Dutch immigration in the U.S.A., Canada, and elsewhere. *Mr. H. Brinks*

223 **Germany.* F.** A survey of German history with particular attention given to the period from the Reformation to the present. Included in the course are medieval background, the Reformation and its impact on later German developments, the religious wars, intellectual developments of the eighteenth and nineteenth centuries, the movement toward political unity in the nineteenth century, World War I, the Weimar Republic, and the rise of the Nazi movement. *Mr. F. Roberts.* Not offered 1984-85.

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 sub-

stitute for this course. *Mr. B. De Vries, Mr. G. Harris.*

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

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

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

305 **Modern Europe.* F and S.** The history of Europe from the French Revolution to World War I. Special attention is paid to social and cultural developments, including the rise of industrial society, ideologies and protest movements, nation-building, mass politics, materialism, and the *fin de siècle* revolution in art and thought. *Mr. D. Diephouse.*

310 **Colonial United States.* F and S.** A study of the colonial origins of the United States from the first settlements to about 1790, with primary emphasis on the intellectual, social, and religious developments, and on the European origins of American thought. Attention is given to the differing cultural values and institutions present in the colonies. This course is designed to serve as one of the American sequence and as an introduction to 355. *Mr. H. Brinks.*

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

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

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

TOPICAL STUDIES

334 **United States Constitutional History.*** A study of the development of American legal and political traditions using the constitution as the focal point. Emphasis is on such themes as the interrelationship among the three branches of government and the relationship between legal education and the decisions of the courts. Particular attention is given to the Supreme Court decisions as they have reflected or molded social, intellectual, economic, and political change. Not offered 1984-85.

351 **English Constitutional History.*** 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. Not offered 1984-85.

355 **Intellectual and Cultural 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. Greydamus.* Not offered 1984-85.

380S **Field Work in Middle East Archaeology.** Summer, 1986. An on-site introduction to archaeological field work in the Middle East designed to expose the student to the methodologies involved in stratigraphic excavation, typological and comparative analysis of artifacts, and the use of nonliterary sources in the writing of Middle East history. Prerequisite: consent of the instructor. *Mr. B. De Vries.*

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

395 **Seminar in History.*** F and S, honor sections. A course in historiography, the philosophy of history, historical bibliography, and the writing of history. *Staff.*

GRADUATE COURSES

571 **Studies in History:** Students will engage in a concentrated investigation of a particular topic or period of history. Advanced reading and discussion of the source materials, literature, problems, interpretations, and more recent findings on a selected period or topic are included. Topic will be selected each time the course is offered. *Staff.*

580 **Resources for Teaching History and the Social Studies.** An exploration of research in the various approaches to the teaching of history and the social studies on the secondary level. Course requirements include the development of a bibliography of resources for the teaching of history and the social studies which students will relate to the curriculum and philosophy of social

studies teaching from a Christian perspective. *Mr. S. Greydanus.*

581 **Historiography.** The course focuses on historical writing as reflective of different personal and cultural styles and on the role of history in the intellectual adventure of man. Historians will be studied to determine their diverse opinions and interpretations. The focus is on understanding historical writing so that it can be taught more effectively. *Staff.*

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

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

JANUARY 1985 INTERIM

W11 **Repression and Revolt in Central America.** Students in this class will examine the historic roots of the current political crisis which is racking Central America. Lectures, films, guest speakers, and class readings will focus on the motives and objectives of political extremists, the United States and Cuba, the Catholic Church, and other participants in the struggle. Grades will be based on a one-hour exam and an eight to ten page research paper. *Mr. D. Miller.*

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 examinations. *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. Greydanus.*

W15 **Christian Missions in China.** A study of the two major waves of missionary activity in China since 1500, the culture which the missionaries found there, the problems it posed for Christian missions, the goals and tactics of the missionaries, and the results of their efforts. In addition to lectures and discussions by the instructor, there are discussions with former missionaries, readings, student reports, and an examination. *Mr. E. Van Kley.*

W50 **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.*

W52 **The European Image of America.** In this reading seminar, students will examine the European image of America by reading a variety of published works on the subject. Three groups of published works are studied: the analysis of intellectuals such as Alexis de Tocqueville, James Bryce, and Alistair Cooke; the literature of immigration, most notably letters written home by ordinary immigrants; and fictional accounts, such as those by Charles Dickens and Evelyn Waugh. Students will write three critical

essays, one drawn from each group of sources. Prerequisites: 102 is required and a college-level course in American history is recommended. *Mr. R. Wells.*

W53 Rewriting the French Revolution.

Once upon a time, historians of the French Revolution wrote harmoniously in an Eden of near unanimity that was provided by a Marxist paradigm. Driven ideologically forward by the Enlightenment of Voltaire and Diderot, the French Revolution, according to this model, was a bourgeois-capitalist uprising which violently overthrew an aristocratic-feudal order, ideologically buttressed, for its part, by Catholicism and an antiquated constitutionalism. Alas! Historians have recently bitten into an apple of discord, and not only has historian Cain sought to slay historian Abel, but a veritable Babel of discourse—French, German, English, and Italian—has arisen, replacing the

innocent harmonies of yore. Beginning with the liberal and conservative traditions of interpretations arising from the Revolution itself, this course concentrates on the recent unravelling of the Marxist paradigm and raises the question of what, if anything, is taking its place. Readings are from the works of Albert Soboul, Georges Levebvre, Alfred Cobban, Alexis de Tocqueville, Francois Furet, and others; emphasis is on the brave new attempts to recover the independence of the political and intellectual dimensions of the Revolution as well as the integrity of the Revolution as an event from the varieties of socio-economic determinisms heretofore in vogue. Discussions based upon daily readings, at least one report, and an examination. Prerequisite: 102,220, or 304. *Mr. D. Van Kley.*

IDIS W26. **Calvinism and Racism.** *Mr. R. Rienstra.*

Latin

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

Mathematics

Professors P. Boonstra, D. Brink, T. Jager, G. Klaasen, J. Kuipers, W. D. Laverell, †S. Leestma, L. Nyhoff, C. Sinke (chairman), G. Van Zwalenberg, †G. Venema, P. Zwier
Associate Professor M. Stob
Assistant Professors V. Nyhoff, J. Warners, G. Talsma

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. Stu-

dents may not receive credit for this course and for 100. Prerequisites: a year of algebra and of geometry in high school. *Mr. P. Boonstra.*

122 Fundamental Concepts in Mathematics: Geometry.* S. The principal focus of this course is geometry. Included is a study of axiomatic systems, congruence, parallelism, similarity, measure, coordinate geometry, and plane transformations. Other topics will depend on the students' background. These may include probability, statistics, computer programming, and introduction to BASIC. Acceptable in non-mathematics MAT concentrations. (Previously 209.) Prerequisite: 100 or 121. *Staff.*

131 Finite Mathematics, Probability, and Statistics. F 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. *Mr. C. Sinke.*

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. M. Stob.*

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

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

321 Foundations of Geometry.* S. Consideration of Euclidean geometry as an axiomatic system, introduction to non-Euclidean geometry, the Poincare model. Prerequisite: a 200-level course. *Mr. P. Boonstra.* Not offered 1984-85.

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. *Mr. P. Boonstra.*

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

335 Numerical Analysis.* S. Analysis of errors in numerical methods, real roots of equations, approximations using poly-

Math 205
82

nomials, calculus of finite differences, numerical methods for differentiation and integration, applications to differential equations, applications to matrix algebra, inversion of matrices, characteristic values. Also listed as Computer Science 335. Prerequisites: 255 and 261. *Staff.*

343 Probability and Statistics.* F. Probability, probability density functions; binomial, Poisson, and normal distributions; central limit theorem, limiting distributions, sample statistics, hypothesis tests, estimators. Prerequisite: 261 or 362. *Mr. M. Stob.*

344 Mathematical Statistics.* S. A continuation of 343 including theory of estimation, hypothesis testing, nonparametric methods, regression analysis, and analysis of variance. Prerequisite: 343. *Mr. M. Stob.*

351 Abstract Algebra.* F. Set theory, relations and functions, equivalence relations; the integers, mathematical induction, and elementary number theory; groups, rings, fields, and polynomials. Prerequisites: two 200-level courses. *Mr. 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. C. Sinke.*

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

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.* F. Topics include the formalization of propositional and quantificational logic. Taught jointly with the Philosophy Department and also listed as Philosophy 381. *Mr. P. Zwier.*

385 General Topology.* S. Elementary set theory, topological spaces, separation properties and connectivity, continuous mappings, homeomorphisms, product and quotient spaces, invariants under continuous mappings, compactness, metric spaces and completeness. Prerequisite: 261 or 362. *Staff.*

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 mathematics in the junior and senior high school. Consideration is also given to materials, both commercial and teacher-made, which can be used to teach mathematics. Prerequisite: mathematics minor or major. *Staff.*

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

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

JANUARY 1985 INTERIM

W51 **Galois Theory.** One of the classical problems of elementary algebra concerns

polynomial equations which can be solved by purely algebraic means. It is well known that any equation of second can be solved by quadratic formula; similar, though more complicated, formulas exist which solve equations of the third and fourth degree. Whether formulas exist giving solutions to equations of higher degree was an unsolved problem for more than three hundred years. In the nineteenth century it was shown that no algebraic means exist for solving general polynomial equations of degree larger than four. The theory developed to solve this problem constitutes the subject matter for this course and is one of the most elegant theories that mathematics has to offer an undergraduate. The topics covered include polynomial rings, field extensions, Galois groups, the fundamental theorem of Galois theory, and applications to polynomial equations. Prerequisite: 351. Satisfies major requirement in mathematics. *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-composition*, 311, 312, and two from 315, 316, 317; or *applied music*, eight semesters from 210, 220, 230, 240, 260, or 270, including a solo recital.

Programs for students preparing to teach in the schools. Students desiring to teach music in the schools can choose one of three programs. A fifteen-course concentration enables graduates to teach music in grades k-12. Such programs, with a primary emphasis on the secondary level, require 103, 104, 113, 114, 123,

124, 203, 204, 213, 223, 224, 237, 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, one course in applied music, and two non-applied electives or by 303, 304, one course in applied music, and one non-applied elective.

General regulations and advisers. The adviser for applied music majors is Mrs. Ruth Rus and the adviser for music education programs is Mr. Dale Topp. All transfer students must consult Mr. John Hamersma at their first registration for an evaluation of their transfer credits in music and to receive counseling into the appropriate sequence of music courses. During their first semester at Calvin, such students must validate their transfer credits in keyboard harmony 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. D. Topp, and staff.*

233 History of Music I.* F, core. A survey of the stylistic development and the cultural context of the art of music in Western civilization. The course begins with an introduction to musical thought and practice in antiquity and the early Christian era followed by a study of Gregorian chants and the principal repertoires of polyphony through the Baroque period. *Mr. C. Stapert.*

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

236 The Enjoyment of Church Music.* F, core. How is music useful to the church, what ought one to listen for in church mu-

sic, by what criteria should church music be judged, how is one to worship by means of music, and how is church music to be enjoyed? Lectures, discussions, readings, record listening, and church services. Open to freshmen. *Mr. J. Hamersma.*

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

BASIC COURSES

103 Materials of Music I. F, core. A course in the development of the ability to grasp and notate the rhythmic, melodic, and harmonic elements of music. Students anticipating any concentration involving music must take 113 and 123 concurrently. See note above concerning the use of this course to meet fine arts core requirements. *Mrs. G. Huizenga, Mr. H. Slenk.*

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

113 Keyboard Harmony I. F, quarter course. A course in the development of the

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

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

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

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

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

204 The Literature and Materials of Music IV.* S. A continuation of 203. A study of post-Romantic and Contemporary music. 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. J. Worst.*

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

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

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

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

237 Conducting. S, half course. A course in basic, general conducting, normally taken in the sophomore year. Prerequisite: 103. *Mr. H. Slenk.*

303 The Literature and Materials of Music V.* F. A continuation of 204. A study of Western music prior to 1500. Prerequisite: 204. *Mr. C. Stapert.*

304 The Literature and Materials of Music VI.* S. A continuation of 303. A study of the Western music of the late Renaissance and early Baroque eras. Prerequisite: 303. *Mr. C. Stapert.*

ADVANCED COURSES

311 Vocal Polyphony of the Renaissance.* S. A study of the vocal style of Palestrina. Exercises in modal counterpoint. Listening repertory of compositions. Prerequisite: 303. *Mr. J. Hamersma.*

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 1984-85.

313 Studies in Music History. S. Prerequisite: 203. *Mr. C. Stapert.* Not offered 1984-85.

315 Arranging, Orchestration, and Scoring.* F. Survey of the history of the orchestra and orchestration, and problems involved in writing for orchestra, band, and stage band. A survey of the technical limitations of each instrument and the human

voice. Projects written by class members will be performed by department organizations whenever practicable. Prerequisite: 104. *Mr. J. Worst.*

316 Arranging, Orchestration, and Scoring.* S. Continuation of 315, which is prerequisite. *Mr. J. Worst.*

317 Composition.* F and S. Writing in contemporary forms and according to contemporary practice. Prerequisite: 104 or permission of the instructor. *Mr. J. Worst.*

337 Instrumental Conducting. F, half course. A course in advanced conducting techniques appropriate to bands and orchestras. Prerequisite: 237. *Mr. D. De Young.*

338 Choral Conducting. F, half course. A course in advanced conducting techniques appropriate to choirs. Prerequisite: 237. *Mr. H. Slenk.*

390 Independent Study. *Staff.*

MUSIC EDUCATION

238 Elementary School Music.* F and S, core. A study of the content and methods for teaching music in the elementary school classroom. Includes consideration of philosophy and materials. This course is recommended for elementary education students. (Music 339 is required of elementary music education majors.) Not open to freshmen. *Mr. D. Topp.*

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. D. Gross.*

160 Strings. Quarter course. Individual lessons in violin, viola, violoncello, bass viol, or classical guitar. *Mr. A. Emerson, Mr. R. Harbaugh, Mr. K. Matsuda, Mr. D. Prudon.*

170 Woodwinds. Quarter course. Individual lessons in flute, oboe, 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, weekly, no credit. Performance classes for students of applied music for the pur-

pose of gaining experience in public performance and increasing knowledge of music literature. Attendance is required of all music majors and students registered for individual lessons in applied music. *Staff*.

195 **String Methods.** F, odd years, half course. Class lessons on all string instruments for the instrumental music education major. Emphasis is on the methods for teaching string instruments. Elementary playing skills are developed. *Mrs. M. De Young*. Not offered 1984-85.

196 **Brass Methods.** S, half course. Class lessons on all brass instruments for the instrumental music education major. Emphasis is on the methods for teaching brass instruments. Elementary playing skills are developed. *Mr. D. De Young*. Not offered 1984-85.

197 **Percussion Methods.** F, half course. Class lessons on percussion instruments for the instrumental music education major. Emphasis is on the methods for teaching percussion instruments. Elementary playing skills are developed. *Mr. D. Gross*.

198 **Woodwind Methods.** S, half course. Class lessons on all woodwind instruments for the instrumental music education major. Emphasis is on the methods for teaching woodwind instruments. Elementary playing skills are developed. *Staff*.

ENSEMBLES

Membership in ensembles is limited to Calvin students except when there is a specific need and the non-student is not replacing a student.

101 **Men's Choir.** F and S, no credit. Open to general college students. Not offered 1984-85.

111 **Women's Choir.** F and S, no credit. Open to general college students. *Mrs. H. Van Wyck*.

121 **Collegium Musicum.** F and S, quarter course. An ensemble of singers and instrumentalists devoted to the performance of medieval, Renaissance, and Baroque music. Open to all students who meet the requirements of instrumentation and the demands of musicianship. Collegium can also include various other small, faculty-directed ensembles such as string quartet, woodwind quintet, flute choir, trombone choir, and jazz band. These are open to members of band and orchestra who meet the requirements of instrumentation and the demands

of musicianship. *Mrs. R. Bylsma, Mr. D. De Young, Mr. C. Stapert*.

131 **Campus Choir.** Quarter course. Representative works in the field of choral literature are studied and sung. Emphasis given to the development of singing and sight-reading skills as well as to regular performances. Open to music majors and others who meet the requirements of voice and musicianship. *Mr. M. Mustert*.

141 **Capella.** Quarter course. Representative works in the field of choral literature are studied and a limited number of selections are prepared for concert performance. Membership is maintained at a set limit and is open only to those who meet the demands of voice, sight reading, and choral musicianship. *Mr. M. Mustert*.

161 **Concert Band.** Quarter course. Representative works in wind literature are studied and prepared for concert performance by both of two groups. The Calvin College Band membership is maintained at a set instrumentation and is open to students who are needed by the band, who can meet the demands of musicianship, and who play wind and percussion instruments. The Knollcrest Band is less demanding in musicianship and in the number of rehearsals and performances. *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 mu-

sic or permission of instructor. *Mr. M. Mustert.*

511 School Instrumental Music. A survey of music and materials available for instrumental classes, small ensembles, bands and orchestras at the elementary, middle school, and high school level. The course covers such topics as the techniques for evaluating materials in terms of their musical value as well as for their effectiveness as teaching tools, the history and the development of literature for the wind band, and the principles of good programming. *Mr. D. De Young.*

512 Using Music to Teach Other Subjects. An examination of the ways in which music may support the learning of such other subjects as history, literature, geography, physical education, basic school skills, Bible, psychology, sociology, and foreign languages. Students will learn how to find, evaluate, and present music in areas that they select. No previous musical skills are required. Students electing the course for only one-half course credit will do less research. *Mr. D. Topp.*

580 Advanced Methods and Materials for Music Education. An examination of music teaching methods and materials in a philosophical and historical context. Students will use readings in the philosophy and history of education combined with related lectures and class discussions as material for developing their own attitudes toward music education. Includes organization of programs for personal and professional growth. *Mr. D. Topp.*

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

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

JANUARY 1985 INTERIM

W12 Music Pedagogy of Orff and Kodaly. By comparison and contrast this course analyzes the currently popular music teaching methods of Carl Orff and Zoltan Kodaly, and the many American adaptations of these methods. Includes readings, listening assignments, classroom demonstrations, discussions, guest lecturers, laboratory teaching, and observation in the schools.

Students will be tested on readings and must complete a major project. Open to all students but especially appropriate for students in elementary education, music education, and church music. *Mr. D. Topp.*

W13 African Music: From Bush to Broadway. A study of the influence of African musical types and styles in the new world—how the music of slaves affected popular and sacred music as well as concert music in North America. The course is taught by means of lectures, film strips, films, and numerous recorded examples. Students are required to attend several live performances, read and review one book, and attend one or two Black American church services. A paper about some particularly Black popular music style and its influence on mainstream American popular music or music theater—i.e. ragtime, rhythm and blues, disco, jazz—is required. *Mr. J. Worst.*

W14 Music for the Recreation Leader. This course emphasizes musical concepts and skills which are valuable for recreation leaders. Rhythm, pitch reading, scales, keys, and simple harmony are studied. Students will learn basic conducting patterns and be involved in song singing and song leading. Use of simple instruments for recreation is included (time will be spent playing the recorder), as well as an introduction to listening concepts appropriate for recreation programs. This course is especially applicable to students in the recreation program, but open to anyone with an interest in leading youth groups, summer camp counseling, etc. No previous musical skills will be assumed, but the student should be able to sing on pitch (i.e. carry a tune). Class presentations, musical performances, quizzes, and a final test. *Mrs. T. Huizenga.*

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 series

of TV films called "Civilization", augmented by lectures and discussions illustrating the expression of the mind of the age in music. Readings in Kenneth Clark's *Civilization*. Listening assignments from representative musical works. Quizzes and final examination. Prerequisite: sophomore status or higher. *Mr. H. Slenk*.

W53 The Language(s) of Singing. The American singer who desires a professional career, or who as an amateur has a real interest in art-song and operatic literature, must have a command of diction in at least three languages other than English, i.e. German, French, and Italian. One week is spent on each of these three languages, first, forming and comparing the vowels and consonants, then applying these sounds in simple prose readings and in song literature. Readings, quizzes, performances, and a final examination. Open to serious students of singing who are currently studying or who have had lessons previously. *Mr. C. Kaiser*.

W54 Music Theory for the Beginner. A study of the elements of music with an emphasis on rhythm, melody, and harmony through lectures, discussions, and practice sessions. The daily written assignments include the listening to, singing, playing, and writing of rhythms, melodies, and harmonies. The student will also examine selected

compositions that illustrate these musical elements. This course is recommended to students with little or no theory background but who have performing skills in music, and to those students who are considering a music major or a major involving music but are uncertain. Prerequisite: the ability to read music, preferably in both treble and bass clefs. Does not satisfy core. *Mr. M. Mustert*.

W55 The Church Organist. The objective of the course is to improve service playing and to define the organist's role in Reformed liturgy and worship. Sessions include service music suggested by the Liturgical Year, hymn and chorale tunes from organ literature, and basic improvisation and accompaniment techniques. Prerequisite: some organ training and/or previous experience as a church organist. *Mrs. S. Boomsma*.

W56 Johann Sebastian Bach. This course is a tercentenary study of the life, time, and works of Johann Sebastian Bach, illustrated by the examination of representative works. The *Mass in B Minor* and the Catechism Chorales from the third part of the *Clavierübung* are studied in depth. Lectures, readings, listening, analysis, and an analytical paper on a work of a student's choice. Two tests. Prerequisite: 104 or permission of the instructors. *Mr. J. Hamersma, Mr. C. Stapert*.

Nursing

Associate Professor C. Kielinen (chairman)

Assistant Professors L. Burden, C. Danford, B. Gordon, M. Leen, T. Mansen, E. Moore, L. Sytsma

Instructors M. Doornbos, S. Matyas, B. Medema, D. Rubingh, B. Timmermans

Teacher-Practitioners J. Staufenberg (Holland Community Hospital), M. Miller (Butterworth

Hospital)

STUDENTS SHOULD INDICATE their interest in nursing at the time they apply for admission to the college. They should start work on their pre-nursing requirements in their freshman year, following the suggested program closely. Transfer students who wish to be considered for admission to the nursing program should apply to the Office of Admissions of the college.

Students wishing to enter the Hope-Calvin Department of Nursing should

make formal application to the department by January 15 of their sophomore year. Applicants should be aware that admission to the nursing program is selective and is not guaranteed by a student's acceptance to the college. Further information and application forms are available in the Department of Nursing and in the registrar's office. The Hope-Calvin nursing program is described in detail on page 71. Prospective students should consult Miss Cynthia E. Kielinen.

The baccalaureate nursing program requires fourteen course units: 301, 311, 321, 352, 373, and 375 in the junior year; and 401, 425, 472, 474, and 482 in the senior year.

301 Concepts of Nursing. F. This course introduces the nursing student to the theory and practice of professional nursing. The course focuses upon the concepts of Man, Health, and Nursing. Prerequisites: admission to the nursing program and registration in 311 and 321. *Mrs. S. Matyas.*

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. Two hours of theory and seven hours of clinical practice per week. In addition, individual family visits will be arranged. Prerequisites: admission to the nursing program and registration in 301 and 321. *Staff.*

321 Assessment and Intervention Strategies for Nursing. F. This course is designed to assist students in developing general physical assessment skills and basic procedural skills necessary for providing nursing care to clients. The course consists of two hours of theory presentation and three hours of laboratory per week. Prerequisites: admission to the nursing program and registration in 301 and 311. *Miss C. Danford, Mr. L. Sytsma.*

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 Nursing Care for Clients in Altered States of Health I. 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 clinical components concurrently with 352:

1. Nursing care of child-bearing families
2. Nursing care of children
3. Mental health nursing
4. Nursing care of adults

Prerequisites: 301, 311, 321 and registration in 352 or 401. *Staff.*

401 Alterations, Adaptation, and Nursing II. F, one and three quarter course. This course is divided into core-theory and seminar. Core-theory focuses on nursing care of clients in situations where life processes are threatened. Alterations in physiological regulation, associated psychosocial aspects of individual and family adaptation, and the multidimensional role of the nurse are considered. A concurrent seminar provides opportunities for the student to make relationships between core theory and clinical nursing experiences. The course consists of four hours of theory presentation and two hours of seminar discussion each week. Prerequisites: 373, 375, and registration in 425. *Mr. T. Mansen.*

425 Nursing Care of Clients in Altered States of Health II. F, one and one half course. A continuation of 375. Clinical nursing practice in nursing specialty areas provides students with an opportunity to apply core theory in a nursing setting. Clinical conferences are held weekly. Students select different clinical components while taking 401. The course consists of 18 hours of clinical laboratory a week:

1. Nursing care of child-bearing families
2. Nursing care of children
3. Mental health nursing
4. Nursing care of adults

Corequisite 401. Select two clinical components concurrently with 401, select clinical components which are different from those selected in 375. *Staff.*

472 Individualized Clinical Nursing. I, half course. An individualized clinical nursing experience designed to meet specific learning needs of students. Students are given opportunities to synthesize their previous learning through caring for clients with complex health problems within a clinical setting. All nursing shifts and working days are used. The weeks include nine-

ty-six hours of clinical practice. Prerequisites: four sections of 375 and 401. *Staff.*

474 Nursing Management for Groups of Clients S. This course gives students the opportunity to integrate nursing theory and skills while developing a more advanced level of nursing practice. Clinical components include experiences in institutional inpatient and community settings. The focus is on nursing management of groups of clients. Nursing theory is presented in weekly seminars; clinical experiences relate theory to practice. Prerequisites: 401, 425, 472, and registration in 482. *Staff.*

482 Nursing in Transition. S. This core theory course expands the students understanding of professional nursing. It explores organizational structure within the health care system. Emphasis is given to multi-dimensional aspects of nursing including teaching groups, research in nursing, and legal-ethical issues. Prerequisites: 472 and registration in 474. *Staff.*

JANUARY 1985 INTERIM

472 Individualized Clinical Nursing. B. Gordon, M. Veen, T. Mansen, D. Rubingh, L. Sytsma, S. Matyas.

Philosophy

*Professors P. De Vos, K. Konyndyk (chairman), R. Mouw, C. Orlebeke, **N. Wolterstorff*
*Associate Professors J. Cooper, G. Mellema, D. Ratzsch, *H. Schuurman, **S. Wykstra*
Assistant Professor L. Hardy

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 (251-252), 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. The student is also required to take a four-unit cognate in another department that is approved by his adviser.

If a student wishes to present one course toward the core requirement in philosophy, it should be 153. If he wishes to present two courses, they should be: 151 and 152; 153 and either 171 or 173; 153 and any intermediate level course; or, if he is in teacher education, 153 and 209 or Education 304.

ELEMENTARY COURSES

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, except that it will not aim to acquaint the student with the history of philosophy. *Staff.*

171 **Introduction to Logic.** F and S. A course in elementary deductive and inductive logic with emphasis upon the use of logic in evaluating arguments. Suitable for freshmen; not recommended for students majoring in philosophy. *Mr. 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. *Staff.*

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.*** S. A study of some philosophical questions arising from religious belief. *Mr. S. Wykstra.*

205 **Ethics.*** F and S. A course designed to deal both historically and situationally with the persistent problems of the moral life. *Mr. 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.*** F. A study of the nature of art and aesthetic judgments. *Mr. N. Wolterstorff.*

209 **Philosophy of Education.*** F and S. A study of the nature, aims, and principles of education. *Mr. G. Mellema.*

INTERMEDIATE HISTORICAL COURSES

All intermediate courses presuppose one course in philosophy.

251 **History of Philosophy I.** F and S, core. A survey of the major Western philosophers and philosophical movements of the ancient and medieval periods. *Mr. C. Orlebeke.*

252 **History of Philosophy II.** F and S, core. A survey of some of the major Western philosophers and philosophical movements from the seventeenth century to the present. A continuation of 251, which is a recommended preparation. *Mr. K. Konyndyk.*

ADVANCED HISTORICAL COURSES

All advanced courses presuppose at least two courses in philosophy, normally two courses from the intermediate historical group.

312 **Plato and Aristotle.** S. Advanced study of Plato and Aristotle. *Mr. C. Orlebeke.* Not offered 1984-85.

321 **Augustine.** S. An intensive study of some of the writings of St. Augustine, including *De Trinitate* and *De Civitate Dei*. *Mr. H. Schuurman.*

331 **Kant.** S. A study of the *Critique of Pure Reason*. Mr. L. Hardy..

333 **Kierkegaard.** S. A study of selected philosophical works of Kierkegaard, focusing primarily on his philosophy of religion. Not offered 1984-85.

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 1984-85.

335 **Nineteenth Century Philosophy.** F. A study of some major figures in nineteenth century continental European philosophy. Mr. L. Hardy.

340 **Twentieth Century Continental Philosophy.** F. A study of major figures in recent phenomenology and existentialism. Mr. L. Hardy. Not offered 1984-85.

ADVANCED SYSTEMATIC COURSES

All advanced courses presuppose at least two courses in philosophy, normally two courses from the intermediate historical group.

367 **Issues in Social and Political Philosophy.** F. An examination of some significant topics in social and political thought, with an emphasis on current theoretical perspectives and on important figures and movements in the philosophical tradition. N. Wolterstorff's *Until Justice and Peace Embrace* will be examined. 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.*** F. Topics include the formalization of propositional and quantificational logic. Taught jointly with the Mathematics Department and also listed as Mathematics 381. Mr. P. Zwier.

390 **Readings and Research.*** F, I, S. Prerequisite: permission of chairman. Staff.

395 **Ontology.*** S. A study of selected topics of ontology. Staff. Not offered 1984-85.

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 1985 INTERIM

W51 **Philosophy in the Dutch Reformed Tradition.** Core. Although philosophy as taught at Calvin is rooted in the Reformed tradition, seldom is the Reformed philosophical tradition itself an object of study. This course begins with an inquiry into the theological roots of Reformed philosophy in the works of Calvin, Bavinck, and Kuyper. It then concentrates on one branch of the tradition, the philosophy of Herman Dooyeweerd and the movement which developed around him at the Free University of Amsterdam. A major concern of the course is to identify the basic positions taken or implied by these Reformed thinkers in ontology, epistemology, philosophy of religion, anthropology, and political philosophy. It also attempts to relate their positions to the general philosophical tradition and to other branches of contemporary Reformed philosophy. The course consists of lectures and class discussions. Daily readings, a research paper, and a final examination are required. Prerequisite: one course in philosophy. Mr. J. Cooper, Mr. L. Hardy, Mr. R. Mouw.

IDIS W17 **Interim in Greece: The Classical Background of Early Christianity.** Mr. C. Orlebeke.

IDIS W23 **Business Ethics.** Mr. G. Mellema.

IDIS W54 **Philosophy of Technology.** Mr. S. Wykstra.

Physical education

Professors J. Timmer (chairman), D. Tuuk, M. Zuidema
Associate Professors R. Honderd, G. Van Anandel, D. Vroon, D. Zuidema
Assistant Professors E. Douma, J. Pettinga, N. Van Noord
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 professional training for physical education teachers, coaches, and recreation leaders; and it directs an extensive program of intramural, recreational, and intercollegiate sports for men and women.

Admission to any of the majors requires the approval of the department chairman. The nine course teacher education major must include three quarter courses from 100–199, 201, 212, 215, 221, four courses from the 230–243 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 230–243, 301, 302, and one course unit from 380. The six-course teaching minor must include three quarter courses from 100–199, 201, 212, 221, 302, and 380 as a half course. With the approval of the department, 220, 221, or 312 may substitute in major programs for a course from the 230 series.

The program in recreation can lead to either a Bachelor of Arts degree or, if the student wishes, to a Bachelor of Arts in Recreation degree. Students in this program must complete a liberal arts major as well as a concentration in recreation. The adviser for this program is Mr. Glen Van Anandel.

The concentration in recreation consists of nine courses providing the context for the program (Biology 115, Psychology 151 and 211, Physical Education 215 and two course units from 220, 221, 230–243, 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 told how to make intelligent exercise decisions, and they are introduced to the idea that health fitness maintenance is a Christian responsibility. The course includes readings, lectures, and guided exercise sessions. *Staff.*

105 Health Fitness. F and S, half course. This course involves the study of positive health practices in health fitness, including cardio-vascular physiology, nutrition, and exercise. The course includes lectures, laboratories, and discussions along with three exercise sessions a week. This option is for students seeking a total health fitness building experience. *Staff.*

110-189 Guided Instructional Program. F, I, S, quarter courses. Various play and sport options are offered in this program. Students are introduced to the techniques and tactics of each sport and are given an opportunity to participate. Courses include: swimming, senior life saving, diving, archery, badminton, bowling, golf, handball,

racquetball, tennis, gymnastics, weight training, basketball, volleyball, soccer, softball, folk and square dance, aerobics dance, orienteering, ice skating, cross-country skiing, and downhill skiing. Beginning and advanced skill classes are offered in most activities. Students should select courses that correspond to their skill levels. *Staff.*

PROFESSIONAL COURSES IN PHYSICAL EDUCATION

201 History and Perspective.* S. The course deals with two areas—the history of physical education in the civilized world, and the problems, purposes, and philosophical implications of physical education as they affect man in general and educational institutions in particular. *Mr. J. Pettinga.*

212 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.*

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.*

230-231 The Coaching of Sports. Half courses. Students with a major concentration in physical education must combine various courses to total the required two-course credit. Prerequisite: a record of participation in skill performance or completion of the same activity in 380.

230 Field Hockey. F. *Miss D. Zuidema.* Not offered 1984-1985.

231 Basketball. F. *Mr. E. Douma.*

232 Baseball/Softball. S. *Mr. J. Pettinga.*

233 Track and Field. S. *Mr. R. Honderd.* Not offered 1984-85.

234 Soccer. F. *Mr. M. Zuidema.*

235 Volleyball/Tennis. S. *Mr. D. Vroon, K. Wolters.* Not offered 1984-85.

236 Football. F. *Mr. J. Pettinga.* Not offered 1984-85.

237 Gymnastics. S. *Staff.* Not offered 1984-85.

238 Wrestling. F. *Mr. J. Pettinga.* Not offered 1984-85.

240-243 Teaching of Activities. F and S, half courses. A study of the basic principles, terminology, skills, and strategies involved in various educational sports activities and the methods and materials that are appropriate for incorporating these activities into physical education programs. Lectures, discussions, demonstrations, laboratory experiments, and student presentations. Prerequisites: 220 and completion of a basic physical education course in the activity to be studied or credit for that activity in 380.

240 Teaching of Gymnastics and Rhythmics. Not offered 1984-85.

241 Teaching of Team Sports. Not offered 1984-85.

242 Teaching of Aquatics. S. *Staff.*

243 Teaching of Racquet Sports and Golf. F. *D. Zuidema.*

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.*

312 Physiology of Conditioning and Injuries. F, half course. The study of physiological principles as they apply to physical training and rehabilitation from injury. Specific types of training programs are studied. Laboratory topics will include athletic injury treatment, taping techniques, and first aid procedures. May substitute for 230 in major programs with the approval of the department. Prerequisite: a biology core course. *Mr. J. Timmer.*

315 Sociology of Sport. S. A study of the social and social-psychological dynamics of sports in modern society. Areas receiving special attention are youth sports, interscholastic sports, and professional sports. Emphasis is put on describing and understanding sports participants, observers, and the relationship of sport as an institution to the rest of the social structure. Offered as Sociology 315. *Mr. G. De Blaey.*

325 Physiology of Physical Activity.* S. A study of physical efficiency and physiological principles involved in human exercise. Emphasis will be placed on the responses of the respiratory, cardiovascular, and muscular systems. The course includes the physiology of factors affecting performance such as the environment and the use of tobacco, alcohol, and drugs. Prerequisite: a biology core course. *Mr. J. Timmer.*

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 admit-

ted 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

303 **Leadership in Recreation Programs.** S, half course. This course studies the organization of recreation programs and gives opportunity for observing programs in action, for structuring new programs, and for developing leadership skills. *Miss D. Zuidema.*

304 **Systems and Structures of Recreation I.** F. Modern recreation programs and their organization are identified and studied in this course with particular emphasis on administrative and leadership functions, recreational needs of social groups, and the design of recreational programs, including the problems of finances and facilities. Students observe recreational programs and facilities in therapeutic centers, churches, industry, and the community. Prerequisites: completion of the non-professional courses in the major. *Mr. G. Van Andel.*

305 **Systems and Structures of Recreation II.** F. Continuation of 304. *Mr. G. Van Andel.*

310 **Theories of Play.** F. A basic course in the theory of recreation. Professionals in recreation need to understand the basic concepts, definitions, and theories of play and recreation to be able to carry out their professional responsibilities. An understanding of the history and theories of play provide a framework for students working toward a Christian perspective on play and recreation and toward their own theories, programs, and practices. Prerequisite: completion of the non-professional courses in the major. *Mr. G. Van Andel.*

345 **Field Instruction in Recreation.** F and S. Students are assigned to work with field instructors in recreational agencies enabling them to understand the specific agencies

and the types of services provided. Individual programs are worked out by the college supervisor, the field instructor, and the student to enable the student to achieve his professional goal. May be repeated once. Prerequisites: 304, 305, 310. *Mr. G. Van Andel.*

346 **Field Internship in Recreation and Seminar.** F and S, two to four course units. Students electing this course are involved full time in a semester's field experience in a recreational agency. An accompanying seminar on campus focuses on the problems of relating theory to practice. Prerequisites: 304, 305, 310, a minimum cumulative average of C (2.0), and the approval of the department. *Mr. G. Van Andel.*

JANUARY 1985 INTERIM

W10 **Leadership of Christian Adventure Programs.** Students will study both humanistic and Christian world and life views as they influence contemporary adventure recreation programs. They will identify the way Biblical principles can be reflected in the theories of adventure recreation and will learn how to lead an adventure experience which fosters spiritual growth and fruitfulness. After studying theory in the classroom through readings, lectures, and discussion, the theory will be applied in a two-week outdoor adventure which will include instruction in skills such as backpacking, wilderness camping and survival, and bicycle touring. During this time students will participate in ongoing evaluation of the experience. Fee: approximately \$350. Readings, a final paper, and evidence of developing competencies. Prerequisite: reasonable physical condition and permission of the instructor. *Mr. R. Bremmer, Mr. G. Van Andel.*

W14 **Application of Psychology to Athletics and Physical Education.** This course is designed to answer how, when, and why psychological factors influence motor performance. Research-based topics include reinforcement, feedback, shaping, modeling, attentional styles, self-efficacy, motivation, the arousal performance relationship, and the control of competitive anxiety. Students will be evaluated on class participation, homework assignments, observational reports, and the development of a comprehensive sport psychology notebook. *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.*

W16 The History of Dance. This course deals with dance through the ages, from primitive through twentieth century forms, and its relationship to the culture and art of its time. Special attention is given to the use of dance in a religious context and its history as a liturgical form. Readings, films, and studio presentations. Final oral presentation, research paper, or choreographic project required. No previous dance experience required. *Mrs. E. Van't Hof.*

IDIS W53 Christianity and Sport. *Mr. M. Zuidema.*

Physics

*Professors R. Griffioen (chairman), A. Kromminga, H. Van Till, *J. Van Zytveld*
Associate Professor D. Van Baak
Assistant Professor S. Haan
Instructor J. Tencate

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.

A physics-computer science group major consists of 126, 186, 225, 380, and 385 (123, 124, 181, and 182 may be substituted for 126 and 186); Computer Science 151, 152, 251, and one from 243, 252, 370, or an approved interim; Mathematics 161, 162, 231 or 255, and 261; and additional approved courses to provide a minimum total of six courses in either physics or computer science.

The teaching group major in physics and chemistry consists of Physics 123, 124, 181, 182, 225, 226; Chemistry 103, 104, and either 253-254 or 301-302; and two and a half courses of approved electives. Courses recommended for such electives include Physics 380, 382, Chemistry 201, 277, 278, and 396. 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. *Mr. W. Vryhof.*

112 Physical Science. F and S, one and a half courses, core. The major objectives of this course are the same as those of 110 except that a laboratory-oriented approach is used. Emphasis is placed on the processes and structure of science. The course is intended for future elementary school teachers and makes use of elementary school science programs and materials but is

open to all students interested in a laboratory-oriented course. Not open to those who have taken or plan to take 110, 123, 126, or 221. Prerequisites: high school algebra and Mathematics 100 or 121 or their equivalent. *Mr. 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. *Staff.*

123 Introduction to Modern and Classical Physics. F, half course. This course, along with 124, serves as an introduction to both classical and modern physics for students planning to major in science or mathematics. Mathematically qualified students are

encouraged to satisfy the core requirement with 123–124 rather than with 110. Topics in classical physics include mechanics and thermodynamics. The nature of scientific study in general and its place in one's world and life view will be discussed. Prerequisites: concurrent registration in or completion of 181, Mathematics 161, and, if possible, Computer Science 141. *Mr. D. Van Baak.*

124 Introduction to Modern and Classical Physics. S, core. A continuation of 123, which is a prerequisite. Prerequisites: Mathematics 161 and concurrent registration in Mathematics 162 and Physics 182. *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. R. Griffioen.*

222 General Physics. S, core. One and one-quarter course. A continuation of 221, which is a prerequisite. Laboratory. *Staff.*

223 Physics for the Health Sciences. F. An introduction to those topics in physics which are basic to work in a variety of health science fields. The course is oriented toward understanding some of the basic laboratory techniques and instruments which are fun-

damental to medical and paramedical instrumentation. Topics include physical measurements and data analysis, basic mechanics, heat, electric and magnetic fields, electric circuits, basic electronics and instrumentation, optics, radioactivity, and X-rays. Prerequisites: high school geometry and algebra. Not open to those who have taken or plan to take 221. *Mr. S. Haan.*

225 Introductory Physics: Electricity, Magnetism, and Waves. F, core. A study of the properties of electric and magnetic fields and of the integral form of Maxwell's equations which describe these fields; a mathematically unified treatment of alternating current circuits, general wave phenomena, and geometrical and physical optics. Laboratory. Prerequisites: 124 or 126, 182 or 186, Mathematics 162, and concurrent registration in Mathematics 261. *Mr. R. Griffioen, Mr. A. Kromminga.*

226 Introductory Modern Physics. S. An introduction to quantum effects and the wave-particle duality of matter and radiation; a study of the structure of atoms, molecules, solids, nuclei, and fundamental particles as described by Schroedinger theory. Einsteinian relativity is also considered. Prerequisites: 225, Mathematics 261, and Computer Science 141. *Staff.*

280 Analog and Digital Electronics. *S. An introduction to electronic circuits and devices and their applications. The following topics are included: A.C. circuit analysis; diode and transistor characteristics; amplifiers; oscillators; operational amplifiers; digital logic gates; flip-flops; counters; integrated circuits; and microprocessors. Laboratory exercises in all of the above topics are performed. Prerequisite: 225. *Staff.*

285 Introduction to Digital Electronics. F. An introduction to digital electronics for students with little or no background in physics or electronics. Topics include: basic circuit elements and laboratory instruments, discrete circuits for digital functions, Boolean algebra for circuit design, logic circuit analysis and design, and integrated circuits. Not intended for students who have taken or plan to take 280, or Engineering 206 or 208. Laboratory. *Mr. J. Ten Cate.*

385 Introduction to Microprocessors. *S. An introduction to microprocessors, including the following topics: technology of microprocessor development, microprocessor architecture, programming, systems de-

sign, 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.* Not offered 1984-85.

345 Electromagnetism.* F, alternate years. The basic equations of classical electromagnetic theory are developed. Applications are made to electromagnetic fields in material media, boundary-value problems, electromagnetic energy, radiation, and physical optics. Relativity with its connection to this theory is studied. Static field theory is considered in 345 while dynamic field theory and special relativity are developed in 346. Prerequisite: 225. *Mr. Van Baak.*

346 Electromagnetism.* S, alternate years. A continuation of 345, which is a prerequisite. *Mr. D. Van Baak.*

365 Thermodynamics and Statistical Mechanics.* S. Equations of state, heat capacities, and the laws of thermodynamics. The thermodynamic potentials. Application to some simple systems and changes of phase. Kinetic theory. Statistical mechanics with emphasis on the canonical ensemble. Determination of entropy and the thermodynamic potentials with application to crystals and gases. Introduction to quantum statistic mechanics. Prerequisite: 335. Not offered 1984-85.

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 1984-85.

390 Independent Study in Physics.* F, I, S, half or full course. Independent readings and research in physics under the supervision of a member of the departmental staff. Prerequisite: permission of the chairman. *Mr. D. Van Baak.*

LABORATORY COURSES

181 Basic Electrical Measurements. F, quarter course. An introduction to basic D.C. electrical measurements including Kirchhoff's Laws, potentiometer circuits, and bridge circuits. Techniques of data handling and analysis and a brief introduction to A.C. circuits are included. *Mr. D. Van Baak.*

182 Electrical Measurements. S, quarter course. Applications of D.C. electrical measurements; A.C. circuits, including experiments on frequency response and resonance; and an introduction to digital circuitry. Prerequisites: 181 and Mathematics 161. *Staff.*

186 Introductory Physics Laboratory. S, quarter course. An introduction to basic D.C. electrical measurements and their use in studying various mechanical systems and thermodynamic phenomena. Not open to those who have taken 181. Concurrent registration is required in 126 or the permission of the instructor. *Staff.*

382 Modern Physics Laboratory.* F and S. Quarter course. An introduction to the basic laboratory techniques in atomic, nuclear, and solid-state physics and a study of some of the more important experiments on which modern physical theory is based. This course may be repeated with the permission of the instructor. Prerequisites: 280, Engineering 206 or 208, or a year of college physics and permission of the instructor. *Mr. D. Van Baak.*

395-396 Physics Seminar and Research.* F, S, half course; I, full course. Experimental or theoretical research on an approved topic and presentation of the result of the re-

search 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.*

JANUARY 1985 INTERIM

W11 Is Nuclear Energy More Dangerous Than Conventional Energy? This course examines some of the dangers to the environment and to public safety and health that are posed by modern technologies for generating electrical energy. The risks are studied quantitatively whenever possible. The course studies nuclear power in detail, first studying scientific aspects of harnessing nuclear energy, and subsequently assessing risks from nuclear accidents and radioactive wastes. Questions concerning connections between nuclear power, terrorism, and the proliferation of nuclear energy are considered. A comparable attempt is made to study dangers arising from burning fossil fuels. Included are discussions of air pollution, acid rain, and the global increase in carbon dioxide. Solar and wind energy are explored as alternatives for the future. Finally, the course examines the presentation of the various technologies by the media. Students are expected to solve some elementary problems, read assigned papers and books expressing differing viewpoints, and write a short research paper. Prerequisite: one course in high school or college chemistry or physics. *Mr. S. Haan.*

W12 Acoustics: Sound Advice. This course introduces students to the elementary concepts of acoustics. Discussions and demonstrations concerning the nature of sound and waves, frequency and pitch, measures of sound and noise, the workings of the ear, and simple psychoacoustics. Additional topics are the study of sound in rooms, the design of spaces for speech, theater, and music (architectural acoustics), and musical acoustics. Lectures and demonstrations. Field trips to various churches and auditoriums. Students will write a brief paper on an acoustics topic and give a short talk on their findings. *Mr. J. Ten Cate.*

W50 Modeling with Microcomputers. Microcomputers (home computers) are becoming commonplace. They have far more computing capability than most of their owners/users realize. This course acquaints students with the power of the home computer. A common set of exercises is performed by all students in order to familiarize them with micro-computers. These exercises apply general physics to environmental problems. After this experience with microcomputers, each student will model a more complex problem of his/her choice. Requirements for passing the course: Satisfactory completion of common exercises and progress on a more complex problem. Prerequisite: 225. *Mr. A. Kromminga.*

W51 Microcomputers and the Real World. A microcomputer is best thought of as an information-processing device; in this view one can readily imagine sources of information other than a keyboard, and destinations other than a display screen. The focus of this course is on processing, by microcomputers, of all sorts of electrically encoded information from the real world. Topics covered include the manipulation of information by a microcomputer, the encoding of real-world information into electrical form by sensors and transducers, and the interconnection of microcomputers with external electronic devices, computer-aided measurement and control, data-taking and data-logging, and closed loop or adaptive microcomputer systems. Programming is done in BASIC with assembly language introduced as needed. Laboratory exercises are conducted using AIM-65, or personal, microcomputers. Lectures, worksheets, labs, projects, and a written report on an application. Prerequisite: programming experience in BASIC. *Mr. D. Van Baak.*

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. For freshmen and sophomores only. *Staff.*

201 American Politics. F and S, core. A study of American national politics. Emphasis is on the social context, constitutional foundations and the major institutions, processes, and functions of American politics. *Staff.*

202 American State and Local Politics. F, core. A study of American politics on the state and local levels. Emphasis is on state policy making, urban politics, and metro-politics. *Mr. J. Penning.*

203 Comparative Government-Europe. S, core. A study of the government and politics of Great Britain, France, Germany, and other Western European states. *Staff.*

206 Comparative Communist Systems. F. A comparative study of Communist political systems with emphasis on the Soviet Union,

China, and Eastern Europe. *Mr. C. Strikwerda.*

207 Introduction to International Politics. F. A study of power relations among nation-states analyzing different theoretical approaches to the study of international politics, describing the state system and its basis in the doctrine of sovereignty, and examining the phenomena of nationalism, imperialism, and war. Included are the problem of war and peace and how states try to resolve conflicts peaceably through diplomacy. *Mr. R. De Vries.*

209 Public Administration. S. An introduction to the political process. Principles of administrative organization, public management, personnel administration, and budgeting. The political and administrative problems encountered by government agencies charged with carrying out public policies. *Mr. J. Penning.*

210 Canadian Government and Politics. S. A study of the political system of Canada with emphasis on national (federal) government and politics. Major topics covered in-

clude the origins and development of Canada's political institutions; Canada's constitution, Canadian federalism; the operation of the parliamentary-cabinet system in Canada; political parties and elections; social forces and trends in Canadian politics. This course carries core credit for Canadian students only. *Mr. J. Westra.*

303 Comparative Government-The Non-Western World.* S. A study of the politics of Asian and African states. Emphasis is on the issues and problems posed by the modernization process. *Mr. R. De Vries.* Not offered 1984-85.

305 History of Political Thought to the Reformation. F. The development of political thought from ancient Greece to the sixteenth century. *Mr. J. Westra.* Not offered 1984-85.

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 expression and defendant rights. *Mr. J. De Borst.*

312 Legislative Behavior.* S. A study of legislatures, legislators, and the legislative process including the impact of institutional structures, political parties, interest groups, and personal norms on the legislative process in democratic political systems. The emphasis is on the federal Congress, but non-American legislatures are considered

for comparative purposes. *Mr. C. Strikwerda.*

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.*

317 Parties and Elections. F. An analysis of the nature and importance of political parties and of elections to American politics. Topics included are: party development, party organization, campaign management, electoral laws, voting behavior, and election reforms. In election years, students enrolled in this course will be encouraged to participate in the political campaign of the party or candidate of their choice. *Mr. C. Smidt.*

318 American Politics and Mass Media. F. A survey of the relationship between American politics and the mass communications media. The course covers the way the federal government through its regulations and its dissemination of information affects the operations of the media, and how the media influence the social and political values of Americans and the functioning of the political system. *Staff.* Not offered 1984-85.

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.*

JANUARY 1985 INTERIM

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 dealing 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.*

W14 Religion and Politics. A study of the relationship between religion and politics. Attention is given to the influence of both religious organizations and religious beliefs upon the functioning of American government and politics. Topics include: religion in American political history, theology and politics; issues regarding church-state relationships; civil religion; religion and public opinion and voting behavior; the role of religious organizations and interest groups in the policy making process; and law and public morality. Books, articles, films, and speakers. Daily readings, a research paper, and a final examination. *Mr. C. Smidt.*

W51 United Nations Interim in New York. A study of the activities, functions, and structures of the United Nations systems through an extensive series of briefings with personnel of the U.N. secretariat and specialized agencies as well as with members of some of the national missions to the U.N. Readings and seminars are integrated with the briefings. Some of the areas of study include peacekeeping, disarmament, the role of the secretary-general, economic development, population, food, and the environment. Students will prepare a

report on one of these topics. Fee of approximately \$625. A list of required readings will be available in the Political Science office in December. Prerequisites: one course in political science and permission of the instructor. *Mr. R. De Vries.*

W53 Russia: Past and Present. A three-week tour of Soviet Russia with visits to Moscow, Kiev, Suzdal, Leningrad, and Novgorod via Helsinki, Finland. The tour focuses on the history and culture of Russia and includes stops at major museums, historical, cultural, and governmental sites. The tour is preceded by three days of lectures and discussion on campus. Students are required to read two assigned texts on Russia and other readings prior to the course. A daily journal is required during the tour. Students are urged to take History 305 or Political Science 206 in the fall of 1985. Fee of approximately \$2,000. Prerequisites: sophomore status or higher and permission of the instructor. Off-campus. *Mr. C. Strikwerda.*

W54 Interim in Washington, D.C. The Washington Center for Learning Alternatives conducts a January Winterim in which two different programs focus upon national politics and the legal profession. Both programs combine lectures, briefings, site visits, with small group study and discussion. The legal course typically includes a mock trial of one week. Program and housing fees are approximately \$500. Applications must be made by November 1, 1984. Additional information about the WCLA may be obtained from Mr. C. Strikwerda. Off-campus. *Mr. C. Strikwerda.*

Psychology

*Professors M. Bolt, J. Brink, W. Joosse, A. Reynolds,**W. Sanderson, R. Stouwie (chairman), R. Terborg, M. Vander Goot, G. Weaver*
Associate Professor S. Stehouwer

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. R. Stouwie.*

207 Developmental Psychology: Adolescent.* F. A study of the transitional years of human development from puberty to early adulthood. Emphasis is on developmental changes and on the tasks which the adolescent faces in his different roles. Not open to students who have taken or plan to take 201.

Prerequisite: 151, Education 301, or permission of the instructor. *Mr. R. Stouwie.* Not offered 1984-85.

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 vari-

ous 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, Mrs. M. Vander Goot.*

308 Experimental Psychology.* S. A continuation of 250 with an emphasis on general research methodology at both the conceptual and applied levels. Consideration is given to topics such as the scientific study of human behavior, the formulation of research problems and hypotheses, research design, statistical inference, decision making, and the writing of research reports. For major and others interested in the social, behavioral, and health sciences. Prerequisites: 151 and 250 or permission of the instructor. *Mr. R. Terborg.*

310 Social Psychology.* F and S. A study of how people think about, influence, and relate to one another. Attention is given to such topics as persuasion and attitude change, conformity and obedience, group conflict and decision making, stereotypes and illusions of social thought, attraction and prejudice, altruism and aggression. Students may not receive credit for this course and Sociology 310. Prerequisite: 151 or permission of the instructor. *Mr. M. Bolt, Mr. J. Brink.*

311 Theories of Personality.* 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 includes an overview of major approaches to counseling and psychotherapy with an analysis of the theoretical aspects and techniques employed. An attempt is also made to integrate these various approaches and to view them from a Christian perspective. Prerequisite: 311 or permission of the instructor. *Mr. S. Stehouwer.*

315 Practicum in a Clinical Setting.* S. An introductory course in theoretical and applied psychotherapy, taught in a hospital setting, and appropriate for students interested in clinical and general psychology. This course deals cognitively and critically with various modes of psychotherapy from a Christian perspective, gives the student an acquaintance with a variety of mental hospital procedures, and offers the opportunity to begin in a minimal way and under supervision some direct experience with the disturbed. Prerequisites: junior-senior standing; departmental approval; 151, 212, and 311. *Staff.*

322 Perspectives of Psychology.* S. The purpose of this course is to explore the relationship of psychology to—its involvement in—such areas as literature, religion, art, and morality. This course will develop a Christian view of the historical and philosophical background of psychology. *Mrs. M. Vander Goot.*

323 Psychology and Religion.* F. A consideration of relationships between psychological explanations and religion. The course includes discussions of several major psychologies of religion, recent theory and research on the psychological dimensions of religious praxis, and the possible relationships between psychological and theological explanations of human action. Prerequisite: 151 or permission of the instructor. *Mr. G. Weaver.* Not offered 1984–85.

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 theo-

ries 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 1984-85.

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. *Staff.*

334 Cognitive Psychology.* A survey of research and theory in the study of human thinking. The course covers the acquisition, representation, and use of knowledge with emphasis on the processes of attention, memory, language, and problem solving. Prerequisite: 151 or permission of the instructor. Not offered 1984-85.

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 1985 INTERIM

W11 Psychology of Social Conflict. This course explores psychological theory and research on interpersonal, intergroup, and international conflict. Both the causes of social conflict and strategies for managing and resolving conflict are considered. The course includes readings, lectures, discussions, films, and group exercises. Two short papers and two written tests on readings and classroom material. *Mr. M. Bolt, Mr. J. Brink.*

W12 Psychology of Individual Differences. An examination of how and why individuals differ in their behavior. Differences in intelligence, sex, cognitive style, and personality traits and their effect on behavior are studied. Lectures emphasize both practical and theoretical issues. Students will research such non-verbal techniques as analysis of handwriting and dreams, with an extensive review of the literature in these areas, and will conclude with some empirical work. A research paper, oral reports, and a final examination are required. Prerequisites: upperclass status and a willingness to "take" a number of I.Q. and personality tests. *Mr. A. Reynolds.*

W13 A Stroll with William James. This course involves the study of the thought and character of William James, the solitary example of an American pre-eminent in a branch of science (Psychology) who at the same time succeeded in deeply affecting the

cultural life of a whole generation. Jacques Barzun's book which supplies the name for the course serves as a text along with supportive writing by or regarding James. James' masterpiece, *Principles of Psychology*, *Pragmatism* as a test for truth, and *Varieties of Religious Experience*, as well as some of his later works, are examined. Discussions of these materials; brief daily papers are required. *Mr. W. Sanderson.*

W14 Psychology and Stories. Of the many ways that stories may be studied, one of the most enlightening is the study of stories as the mirror of personality. This course uses the methods of Freudian, Jungian, and Phenomenological psychologies to study a novel, selected folk tales, and two feature length films. Each student is expected to prepare three short papers, present a story to the class, and compose a tale. Assessment of student performance will be based on successful completion of these assignments. Reading lists will be available in the Psychology Department office in December, and students are expected to complete background reading prior to the beginning of interim classes. *Mrs. M. Vander Goot.*

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. Topics include presentation of relevant research on approaches to parenting and the behavior and emotional development of children, and discussion of such topics as biblical perspectives on authority and discipline in the home, parent-child relationships over the course of development, preparing for a child, 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. The course includes readings, presentations by the instructors and resource persons, supplementary films and projects, case studies, and group activities. Prerequisites: junior or senior status and 151, Education 301-303, or permission of the instructor. *Mrs. N. Stehouwer, Mr. R. S. Stehouwer.*

W52 Uses of Psychology in Industry and Other Organization. Students in this workshop examine how psychology is used in industry and other organizations for the training and development of employees, in selection and placement, and in performance analysis and evaluation. Class time is divided between the discussion of major issues and learning how to develop skills in such areas as evaluation, workshop organization, interviewing and selection, trouble shooting, and evaluation of performance. Readings, group discussions and exercises, and daily written projects. Prerequisite: 151. *Mr. G. Bolt.*

W53 The Psychology of the Human Infant. Infancy—from birth to fifteen or eighteen months of age—is viewed by many as the most critical segment of life, the period in which the basic frameworks for later development are established. This course considers sensory, motor, perceptual, cognitive, social, and emotional aspects of infant development, and uses theory and research papers, demonstrations, and observations as resource materials. Student performance will be assessed by periodic quizzes; a course paper is also required. Prerequisites: two courses in psychology. *Mr. R. Stouwie.*

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, J. Primus, G. Spykman, L. Sweetman, H. Vander Goot, C. Vos, L. Vos

Assistant Professor P. Holtrop

Instructors D. Schuurman, R. Van Leeuwen

Multicultural Lecturer D. Cloete

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 six courses. All students complete a four-course sequence consisting of Religion and Theology 151, 305, 395, and Interdisciplinary 234. Two additional courses are chosen in consultation with the adviser of the program from the following: Art 231, Classics 231, History 201, 202, Philosophy 204, 205, Psychology 323, Religion and Theology 206, 207, 208, 301, 303, 311, 313, 327, 328, 332, Sociology 217, 311, and approved interim courses. The adviser for this program is Mr. Henry Hoeks.

There are three other departmental minor programs. One in Biblical Studies requires five courses from 103 or 108, 207, 208, 302, 327, 328, plus another core course. The minor in Theological Studies requires five courses from 204, 206, 301, 303, 304, 308, 311, 312, 313, Idis 234, plus one Biblical Studies core course. The minor in Religion and Theological Studies requires 151 plus one course from each of the following categories: Biblical, Theological, Historical, Religio-cultural, and Missions and World Religions. An appropriate interim course may be included in any of these programs with the approval of the chairman.

The core requirements in religion and theology are met by selecting one from the following courses in Biblical studies: 103, 108, 207, 208, 327, and 328, and one from the following courses in Theological, Historical, and Religio-cultural studies: 206, 301, 303, 304, 308, 311, and 312. Any departmental course except interims may be chosen by students electing a third core course in religion and theology.

BIBLICAL STUDIES

103 **Biblical Theology.** F and S, core. A study of the unfolding of the history of redemption as set forth within the historical framework of the Old Testament, intertestamentary, and New Testament eras. Biblical books and Apocryphal literature are analyzed and the major themes of Scripture are explicated. Students may not take this course and 108. Open only to freshmen and sophomores. *Staff.*

108 **New Testament Biblical Theology.** F and S, core. A more complete coverage of the biblical theology of the New Testament than can be offered in 103. Open only to freshmen and sophomores. *Staff.*

207 **Old Testament Prophets.** S, core. An intensive study of the place and role of the major and minor prophets in the Old Testament, the commentary they offer upon the history of redemption in Old Testament times, and an exploration of their basic themes and their continuing relevance. Not open to freshmen. *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. *Mr. B. De Vries.*

327 **Old Testament Interpretation.*** F, core. An intensive study of the basic principles and methods of biblical interpretation developed in the context of the biblical-theological themes of the Old Testament. Designed especially for departmental majors. Prerequisite: junior or senior standing. *Mr. C. Vos.*

328 **New Testament Interpretation.*** S, core. An intensive study of the basic principles and methods of biblical interpretation developed in the context of the biblical-theological themes of the New Testament. Designed especially for departmental majors. Prerequisite: junior or senior standing. *Mr. L. Vos.*

THEOLOGICAL STUDIES

206 **Reformation Theology.** F and S, core. A study of Christian doctrine as formulated in the Protestant Reformation and refined and elaborated by later Reformed theologians. Comparisons are drawn between the Reformed system and those of other branches of Christendom. Calvin's *Institutes of the Christian Religion* serves as a basic text. Not open to freshmen. *Staff.*

308 **Contemporary Theology.*** F, core. Selected writings of significant contemporary theologians are read and evaluated. Prerequisite: junior or senior standing. *Mr. H. Vander Goot.*

312 **Early Christian Theology.*** S, core. A study of the growth of the church and its self-conscious commitment to an articulation of its faith; from the sub-apostolic age through St. Augustine. Development and growth of thought will be emphasized and selected writings of major theologians will be studied. Prerequisite: junior or senior standing. Not offered 1984-85.

313 **Roman Catholic Theology.** F. The development of Roman Catholic theology from the medieval era to present times, finding its climax in contemporary changes growing out of Vatican II. The Council of Trent, Counter-Reformation theology, papal encyclicals, Vatican I, and major schools of thought and shifting practices will be examined. Prerequisite: junior or senior standing. *Mr. G. Spykman.*

HISTORICAL STUDIES

303 **General Church History.*** S, core. A survey of the history of the Christian Church from its beginning to the present time, noting deviations from apostolic faith and practice, the interplay with the political, the great Church councils, the crises that emerge, divisions and reunions, and the confluence of forces that determine the complexion of the Christian Church today. Not open to freshmen. *Mr. J. Primus.*

304 **American Religious History.*** F, core. A consideration of the religious history of our country from the immigration period to the present. Attention is paid to the European background, the early church beginnings in their diversity, the colonial era, the westward movement, current ecumenism,

and the major social and political developments in their influence upon the American religious scene. Consideration will also be given to the historical antecedents and the development of the Christian Reformed Church in America. Not open to freshmen. *Mr. J. Primus.*

RELIGIO-CULTURAL STUDIES

254 **Surpassing Righteousness.** F. A course in which the Sermon on the Mount (Matthew 5-7) is discussed with reference to such basic themes as the poor, the beautitudes, love for the enemy, etc., with special emphasis on the South African context. *Mr. D. Cloete.*

255 **Refugee and Stranger.** S. A course in which the First Letter of Peter is analyzed in terms of such basic themes as group consciousness, the household of God, oppression and obedience, etc., with reference to the South African situation. *Mr. D. Cloete.*

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. Holthrop.*

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 renaissance are examined. Prerequisite: one course in biblical studies, preferably 103. Not offered 1984-85.

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 1984-85.

204 **History of Missions.** F. The record of missionary history through the ancient, medieval, and modern periods is examined with a view to ascertaining the principles that come to expression, the methods employed, the areas covered, the chief figures, and the measure of success or failure. In the modern period the great missionary conferences of the twentieth century are analyzed and evaluated. Not open to freshmen. Not offered 1984-85.

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 read-

ings 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. *Mrs. M. Griffioen.*

246 Field Work in Church Education II. S. half course. A continuation of 245, which is a prerequisite. *Mrs. M. Griffioen.*

319 Foundations of Religious Education.* S. This course begins with an historical survey of informal and formal religious educational practices from early Hebrew times to those of contemporary North American homes, churches, and schools. The course proceeds to a consideration of some salient socio-cultural, theological, and developmental considerations involved in religious education. Not open to freshmen. *Mr. H. Hoeks.*

390 Independent Study. Staff.

395 Seminar: Religion and Education.* F. A course for seniors in the Academic Study of Religions minor. It includes practical and bibliography work and concludes with a major research paper. *Mr. H. Hoeks.*

396 Seminar: Religion and Theology.* S. A course for senior majors in Religion and Theology which provides a focus on significant theological issues and on theological bibliography. A major research paper is required. *Mr. G. Spykman.*

GRADUATE COURSES

510 Old Testament Writings. F. A study of the Old Testament writings with a major emphasis on the Psalms, Proverbs, Job, and Ecclesiastes 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 lev-

els 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 1985 INTERIM

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 the 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? Did Tertullian really say of woman, "You are the devil's gateway"? And Aquinas, "Woman is defective and misbegotten"? Students will examine the role of woman as expressed in the writings of the theologians of the church from the second century A.D. to the present. They will attempt to analyze how the opinion of the church leaders influenced the role of women in the church. This course has a theological and historical focus rather than a

biblical-hermeneutical one. Readings, lectures, discussions, reports, and papers. *Mr. L. Vos.*

W14 Jeremiah and Our Jeremiads. This study of the book of Jeremiah attempts to determine whether Jeremiah is indeed too ill-humored—as our expression *jeremiad* suggests—or whether his ministry offers a model for an appropriate Christian response to our society. Jeremiah's conflict with the false prophets is examined for guidelines to discern the true prophets of today. The encounters between Jeremiah and the kings are scrutinized to find applicable approaches to our governments. Attention is given to Jeremiah's vision for the future and his role in the progressive nature of the history of revelation. An attempt is made to read and discuss the entire book in class with students providing oral and written commentaries on select passages. One five-page paper on a chosen topic. *Mr. C. Vos.*

W15 God's Word Near You. Sermons on the same subject and based on the same Scripture passages sometimes differ markedly. In South Africa one can often detect a White or a Black perspective in the sermon. This course will compare a number of South African sermons to detect the perspective and to analyze the different hermeneutics operative in the sermons. *Mr. D. Cloete.*

W51 Introducing Martin Luther at Calvin. In the wake 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: Why did Luther become a reformer? What were the key themes in his thought? How does Luther compare with John Calvin? What are the connections between Luther and modern Lutheranism? Lectures, discussions, films, guest speakers, off-campus visits, and student reports. A written log including two four-page papers. Prerequisite: one course in religion and theology. *Mr. J. Primus.*

W54 From Calvin to Calvinism. A study of what went right and what went wrong in the development of Calvin's theology. The course concentrates on Calvin and the revision of his thought by his successor, Theodore Beza, and seeks to shed light on why we are where we are in current Reformed discussions. Calvin's creation orientation is contrasted with predestination orientations in later Calvinism. Assigned and optional readings in Calvin, Beza, Ames, Edwards, Hoeksema, Barth, Berkouwer, Daane, Boer, and others. References to current discussions in *The Banner*, *The Reformed Journal*, *The Outlook*, and other periodicals. Short papers and class presentations, with an option of a larger paper or take-home examination, are required. Prerequisite: 206 or permission of the instructor. *Mr. P. Holtrop.*

W55 Hermeneutics and Holy Scripture. How does the way one uses the Bible in family, church, and devotional life relate to what theologians and historians often do with it in academic courses? Has faith in the message of the Bible been upset by what often gets said by higher critics about creation and evolution, about historical Adam and Eve, and about cultural setting of New Testament teachings? This course explores the relationship between ordinary use of the Bible and modern historical-critical approaches. It takes for granted that there is a real conflict between faith and much existing scholarship and will examine how that conflict should be handled. The course will be taught through lectures, guest speakers, and group discussions. Students will be expected to report in class on assigned readings. In addition, a daily journal describing our work and detailing the student's own reactions is required. Prerequisite: one course in Religion and Theology. *Mr. H. Vander Goot.*

IDIS W24 Proverbs in Bible and Life. *Mr. R. Van Leeuwen.*

IDIS W28 Religion in Chinese Life. *Mr. J. Lagerwey.*

IDIS W29 The Bible and Psychology. *Mr. E. Johnson.*

Sociology and social work

*Professors G. De Blaeij, P. De Jong, H. Holstege, R. Rice, T. Rottman, W. Smit, D. Smalligan (chairman), D. Wilson
Associate Professor 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. Seven courses must be taken in the Department of Sociology and Social Work: 151, 300, 301, 306, 313, and two course units from either 380 or Political Science 380. The remaining courses provide a foundation for a broad range of criminal justice vocations. Two courses must be selected from Political Science 201, 209, 210, 310, Psychology 211, 212, 310, 311; a third course is chosen from any of these or from an approved interim; and two courses must be chosen from Philosophy 202, 207, and either 205 or Religion 311. The adviser for this program is Mr. T. Rottman.

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 organizations. All students in this concentration are required to have at least three hundred hours in 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.* Not offered 1984-85.

217 Social Anthropology. F and S, core. A study of the historical trends in anthropology that have led to its present day perspective. The concepts of functionalism and cultural relativism are examined and evaluated. The course surveys various cultural patterns around the world. *Mr. D. Wilson.*

253 Intercultural Communication. F and S. An examination of the anthropological principles relating to cross-cultural communication. This examination requires an extensive comparison of the components of cultural systems and the nature of cultural dynamics. The areas of application include government, business, peace corps, development, and mission work, with special emphasis on the last two. Special topics include developing an appropriate attitude regarding indigenous cultures and the management of culture shock. *Mr. D. Wilson.*

302 Urban Sociology and Community Organization.* 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. An analysis of deviant behavior: its causes, manifestations, prevention, and programs of control. Special attention is given to the role of social norms in generating as well as controlling deviance. Emphasis is put on ways in which social structures generate and label deviance. Implications are drawn for various institutions, particularly the school and the church. *Mr. P. De Jong, Mr. T. Rottman.*

308 Population and Society.* F. This introduction to demographic analysis of society includes a consideration of the major demographic theories of population growth and how these contribute to an understanding of population explosion; a review of how the socio-cultural dimension of human society affects major sources of population growth (fertility, mortality, migration, and how variations in these reciprocally affect society); and an analysis of the causes and consequences of population size, distribution, and composition for human society. *Mr. J. Muwonge.*

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 1984-85.

310 **Social Psychology.*** F. Human behavior is a consequence of man's psychological make-up and his socio-cultural environment. Attention is given to social interaction as it occurs in small group settings. Attention is also given to theoretical frameworks emphasizing self-concept and role playing. Students may not receive credit for this course and Psychology 310. *Mr. G. De Blaeys.*

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.* Not offered 1984-85.

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. *Staff.*

313 **The Criminal Justice System.** F. A study of the nature of crime in society and the interrelationships among criminal law, social order, and social justice. Attention is given to theories and definitions of crime, its cause and control; changing ideas about the role of police, court, and prison personnel; and the place of the Christian community in developing and maintaining an improved system of criminal justice. *Mr. T. Rottman.*

314 **Contemporary Social Problems.** S. Two different social problems will be studied this year. Those in Section A with Mr. T. Rottman will study cultural and social responses to death and dying. The study will begin with a theoretical examination of social problems generally and will relate these theories to the particular problems associated with death and dying and how they are viewed by contemporary society and by the dying person himself. The concepts and customs surrounding death and dying will be examined to determine how functional they are in their own terms and how compatible they are with biblical norms. Those in Section B with Mr. J. White will be concerned with ethnic relations and dynamic interaction among ethnic groups. Values, norms, roles, and institutions are investigated in terms of racism, ethnic pluralism, and

assimilation. The perspective is worldwide, but the emphasis is on the United States.

315 **Sociology of Sport.** S. A study of the social and social-psychological dynamics of sports in modern society. Areas receiving special attention are youth sports, interscholastic sports, and professional sports. Emphasis is put on describing and understanding sports participants and observers and the relationship of sport as an institution to the rest of social structure. *Mr. G. De Blaeys.* Not offered 1984-85.

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. 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. *Mr. J. Bradford.*

301 Social Work Practice. S. Students are taught the techniques of social work with an emphasis on how basic social work concepts are related to professional practice. Prerequisite: 300 or permission of instructor. *Mr. W. Van Woerkom.*

303 Child Welfare and Family Services.* F. A study of social policy and service delivery in child welfare and family service agencies. Major topics include: a history of child welfare and family service policy in Europe and North America and the factors causing changes in these policies; a description and evaluation of the contemporary service delivery system and treatment methods; a study of unmet needs and present trends; and a sociological analysis of the relationship between the family, courts, politics, and contemporary American society. *Mr. W. Van Woerkom.*

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 1984-85.

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 Blacy.*

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 1985 INTERIM

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.*

W16 Vocationally Related Issues in Criminal Justice. This course is designed to provide an understanding and appreciation of both the opportunities offered and the challenges confronted by those engaged in criminal justice related careers. It is geared to those who are seriously considering criminal justice as a vocation. Key issues are identified and located within their theoretical contexts with the aid of lectures, assigned readings, and related materials. Students are required to be sufficiently familiar with the issues to sustain a dialogue with instructor and guests, to write a major paper, and to pass a final examination. A partial reading list will be available in the Sociology Department office in December. *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.*

W55 The Child Care Worker. For many college graduates, the position of child care worker is their first job in the human services field. However, many persons have had very limited training for such responsibilities. This course helps the student to understand the role and function of the child care worker with attention to effective techniques and avoidance of burn out. This course includes interviews with child care workers and former residents from residential treatment centers, field case studies, role plays, and a final examination. Prerequisite: junior or senior status or permission of the instructor. *Mr. D. Smalligan, Mr. A. Verkaik.*

W56 The Sociology of Nonviolent Social Change. An examination of nonviolence from a sociological perspective and of the sociological principles involved in effective nonviolent change. Nonviolent change is examined in light of biblical perspectives,

especially those given in the Sermon on the Mount. Each student will study an area of the world or one social situation in which there is serious injustice, studying first the historical background of the present situation and then the nature and causes of the resulting injustice. Finally the student will develop a strategy of nonviolent social change which is consistent with biblical teaching. Readings and a paper or class presentation are required. Prerequisite: 151. *Mr. J. White.*

W57 Conducting The Helping Interview. A basic course in interviewing skills for those who wish to enter a helping profession. Focus is on the initial interview, not on diagnosis and treatment. Primary emphases are on an overview of the most prevalent personality theories, training in empathy and active listening skills, practice of these skills in videotaped roleplays, and building the relationship. Lectures, roleplays, videotapes, films, and speakers from the community. Periodic tests and student reports. Prerequisite: junior or senior status or permission of the instructors. *Mrs. S. Bruggink, Mrs. S. Verwys.*

W58 Social Work Treatment in the Mental Health Setting. This course focuses on the nature and responsibilities of the social worker in a mental health setting, identifying necessary methods and skills of treatment and increasing awareness of and interest in social work in mental health settings. Lectures, class presentations, and field trips. Case studies, a paper, and an examination are required. Prerequisite: junior or senior status or permission of the instructor. *Mr. W. Postmus, Mr. L. Sonksen.*

IDIS W25 Africa: An Introduction for Non-Africans. *Mr. D. Wilson.*

Spanish

Associate Professors *B. Class, *S. Clevenger, E. Cortina (chairman)*
Assistant Professor ***Y. Byam*
Instructor *M. Bierling*

PROGRAMS FOR STUDENTS wishing to major in Spanish are worked out individually by the chairman. To be eligible a student must have completed at least

two courses with a minimum average of C (2.0) and must have completed 101-102, 121-122, or the equivalent.

The typical major requires ten courses beyond 102 or 122 and must include 123, 201, or the equivalent, 215, 216, 217, 218, and four 300-level literature courses. Six course minors are also possible.

Teacher education majors require nine college-level courses including 215, 216, 217, 218, 360, and one from 371, 372, or an interim in Mexico or Spain. The minor requires six college-level courses and should include 215, 216, 217, and 218. Students in teacher education must pass a Spanish proficiency examination 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 or either semester. The adviser for these programs is the chairman.

The fine arts core may be met by 217, 218, and 300-level literature courses.

LANGUAGE

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

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

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

201 **Intermediate Spanish.** F. Review of essential grammatical structures and further training in spoken and written Spanish. Readings from significant Spanish authors. Prerequisites: 101 and 102 or other equivalents. *Staff.*

202 **Intermediate Spanish.** F and S. Continuation of 201. *Staff.*

215 **Advanced Grammar and Conversation.*** F. A course for the student who wishes to improve his facility in the language, who is preparing for graduate study, or who expects to teach Spanish. The course includes the intensive study of grammar, vocabulary, and idioms as well as intensive

use of drills and exercises to develop competence in speaking and writing idiomatic Spanish. The emphasis is on improved pronunciation and fluency through conversation, debates, and oral presentations. Prerequisite: 202 or its equivalent. *Mrs. Y. Byam.*

216 **Advanced Composition and Translation.*** 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. E. Cortina.*

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.** S. A study of the Spanish novel from *La Celestina* to the present requiring the reading and interpreta-

tion of selected chapters from outstanding novels as well as of complete works. The emphasis is on the chief characteristics of the various types of novels. Conducted in Spanish. Prerequisite: 217. *Mrs. S. Clevenger.*

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.*

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 1984-85.

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. Not offered 1984-85.

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 1984-85.

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 1984-85.

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. *Mr. B. Class.*

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 1984-85.

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 1984-85.

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

395 **Seminar.***

JANUARY 1985 INTERIM

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.*

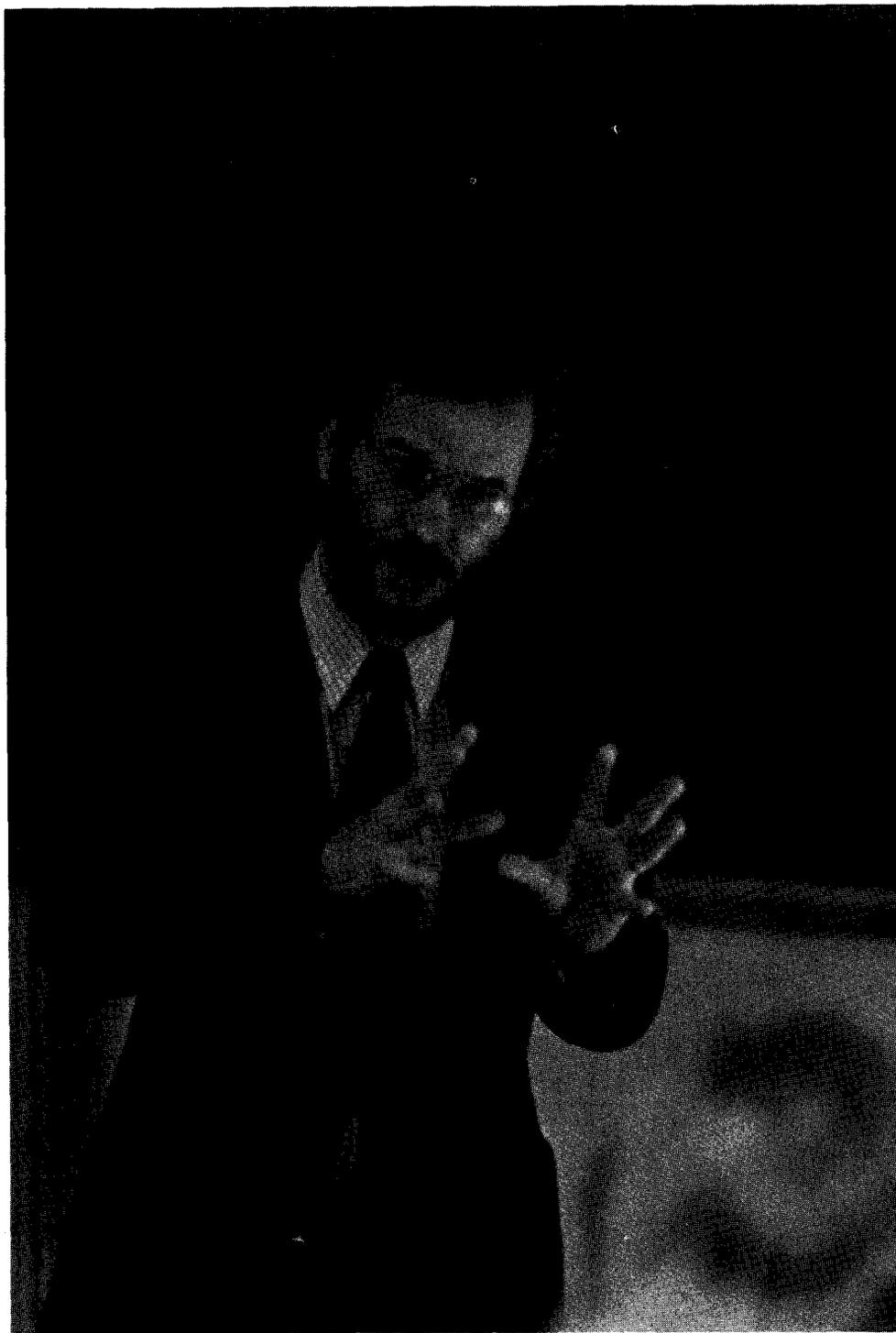
W50 **Spanish Interim in Spain.** This course is approximately four weeks in length and is conducted in Madrid and Denia, Spain. A brief tour through Madrid visiting monuments and museums is followed by three weeks of study in Denia, Alicante. While in Denia, students spend three hours in class daily and live with Spanish families. Fee of approximately \$1,500. Prerequisites: 201 or its equivalent and permission of the instructor. Off-campus. *Mrs. S. Clevenger.*

W53 Business Spanish. This course presents the practical knowledge and skills needed to engage in business dealings with individuals and institutions in Spain and Hispanic-America. Subjects covered include Inter-American trade, banking, business management skills, commercial correspondence in Spanish, translation methods, telephone procedures, and inter-office communications. Quizzes, an examination, and

a letter book. Prerequisite: permission of the instructor. *Mr. B. Class.*

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. M. Bierling, Miss M. Boelema, Miss S. Kallemyn, Mrs. D. Lucar.*





Board of Trustees

CLASSICAL TRUSTEES

Gerrit Bieze, B.D., *Classis Eastern Canada*
Edward J. Blankespoor, B.D., *Classis Grandville*
Roger Brummel, Ph.D., *Classis Holland*
Virginia Christian, *Classis Hudson*
Sidney Cooper, B.D., *Classis Chatham*
Robert De Bruin, Ph.D., *Classis Cadillac*
Edward Den Haan, M.Div., *Classis Huron*
Charles De Ridder, B.D., *Classis Muskegon*
Robert W. De Vries, B.D., *Classis Hackensack*
Willard H. De Vries, B.D., *Classis Grand Rapids South*
Jake De Waard, *Classis Pacific Northwest*
John T. Ebberts, B.D., *Classis Orange City*
Orin Gelderloos, Ph.D., *Classis Lake Erie*
Sidney Greidanus, Th.D., *Classis Alberta, North*
Allan Groen, B.D., *Classis Minnesota North*
Richard M. Hartwell, Sr., Th.M., *Classis Chicago South*
John Hoeksema, M.D.W., *Classis Wisconsin*
Harry Holwerda, M.D., *Classis Illiana*
Jerry J. Hoytema, B.D., *Classis Hamilton*
Cornelius Hutt, B.A., *Classis Atlantic Northeast*
John Joldersma, B.D., *Classis Grand Rapids North*
Peter M. Jonker, B.D., *Classis British Columbia*
James Jooose, B.D., *Classis Alberta South*
Bruce Keuning, M.A., *Classis California South*
Siebert Kramer, B.D., *Classis Pella*
Herman Minnema, Th.M., *Classis Kalamazoo*
Derk Pierik, B.D., *Classis Toronto*
Ronald Scheuers, B.D., *Classis Minnesota South*
Arthur Stienstra, B.D., *Classis North Central Iowa*
John Vander Beek, Ph.D., *Classis Columbia*
Ray Vander Molen, M.A., *Classis Rocky Mountain*
Ronald Vander Molen, Ph.D., *Classis Central California*
Wilbert M. Van Dyk, Th.M., *Classis Grand Rapids East*
Adrian A. Van Geest, B.D., *Classis Quinte*
John Van Regenmorter, B.D., *Classis Sioux Center*
William Venema, D.D.S., *Classis Northern Illinois*
Jay Wesseling, B.D., *Classis Zeeland*
Robert Westenbroek, B.D., *Classis Florida*
Elmer Yazzie, B.A., *Classis Red Mesa*

DISTRICT TRUSTEES

John Breuker, Jr., M.A., M.A., *Central District*
Mildred Buma, R.N., *Central District*
Jay Morren, M.A., *Central District*

EXECUTIVE COMMITTEE

Edward Blankespoor, Roger Brummel, Mildred Buma, Robert De Bruin, Charles De Ridder, Orin Gelderloos, John Hoeksema, Harry Holwerda, Jerry J. Hoytema, John Joldersma, Jay Morren, Wilbert M. Van Dyk.

Administration

PRESIDENTS

John H. Hiemenga, M.A., B.D., 1919–25
Johannes Broene, M.A., 1925–30
Rienk B. Kuiper, M.A., B.D., 1930–33
Ralph Stob, Ph.D., 1933–39
Johannes Broene, M.A., 1939–40
Henry Schultze, B.D., 1940–51
William Spoelhof, Ph.D., LL.D., Litt.D., L.H.D., 1951–1976
Anthony J. Diekema, M.A., Ph.D., 1976–

PROVOST

Peter A. De Vos, Ph.D., *Provost*

ACADEMIC ADMINISTRATION

Rodger R. Rice, Ph.D., *Dean for the Social Sciences and for Language, Literature, and Arts*
Gordon L. Van Harn, Ph.D., *Dean for the Natural Sciences and Mathematics and for the Contextual Disciplines*
Corrine E. Kass, Ph.D., *Dean for Academic Administration*
Charles J. Miller, Ph.D., *Assistant to the Provost*
Ernest Van Vugt, M.A., *Registrar*
Marvin Monsma, M.A.L.S., *Director of the Library*
M. Howard Rienstra, Ph.D., *Director of the H. H. Meeter Center for Calvin Studies*
Conrad J. Bult, M.A.L.S., *Assistant Library Director, College-Related Matters*
Peter De Klerk, M.Div., M.Ln., *Assistant Library Director, Seminary-Related Matters*
Evelyn J. Diephouse, M.Ed., *Director of the Academic Support Program*
Madge Strikwerda, M.A., *Director of Teacher Certification*
Samuel J. Anema, M.S., *Director of Computing Services*
Herbert J. Brinks, Ph.D., *Curator of the Colonial Origins Collection*

BUSINESS AFFAIRS

Henry De Wit, M.B.A., *Vice-President for Business and Finance*
Lester Ippel, *Controller*
Edward Timmer, *Chief Accountant*
Jay Timmer, *Director of Physical Plant and Security*
Keith Johnson, B.A., *Manager of the College and Seminary Stores*
Robert Struyk, *Conference Coordinator*
Robert J. Doornbos, *Security Officer*

COLLEGE ADVANCEMENT

Peter Vande Guchte, M.B.A., Ed.D., *Vice-President for College Advancement*
Wayne K. Hubers, M.A., *Director of Scholarships and Financial Aid*
Thomas A. Van Wingerden, B.A., *Assistant Director of Financial Aid*
Patricia L. Haan, M.B.A., *Financial Aid Counselor*
Peter M. Harkema, M.A., *Admissions Development Director*
James R. Van Wingerden, B.A., *Assistant Director of Admissions Development*
Connie Bilthouse, B.A., *Admissions Counselor*
Terri F. Harris, B.A., *Admissions Counselor*
Karen Bode Houseman, B.A., *Admissions Counselor*

Dale D. Kuiper, B.S., *Admissions Counselor*
Jeanne Jonker Nienhuis, B.A., *Admissions Counselor*
Donald Lautenbach, M.A., *Director of Admissions*
Donald G. Distelberg, B.A., *Director of Development*
William J. Alphenaar, M.S., *Assistant Director of Development*
John C. Heerspink, M.Mus., *Director of Planned Giving*
Michael J. Van Denend, M.A., *Director of Alumni Relations*
Thomas J. Ozinga, M.A., Ph.D., *Director of College Relations*

STUDENT AFFAIRS

Bernard E. Pekelder, B.D., M.A., *Vice-President for Student Affairs*
Donald L. Boender, M.A., *Dean of Men*
Marilyn E. De Boer, M.S.W., *Dean of Women*
William K. Stob, B.D., Th.M., Ed.D., *Dean of Student Life*
Dale Jay Cooper, B.D., *College Chaplain*
John W. Verwolf, M.Ed., *Director of Placement*
Warren J. Boer, B.D., M.A., D.Min., *Director and Counselor in the Broene Center*
Anamarie Joesse, Ed.S., *Counselor in the Broene Center*
James M. Hollebeek, M.A., Ed.S., *Counselor in the Broene Center*
John Rupke, M.D., *College Physician*
David Kreuze, M.D., *College Physician*
Robert La Fleur, M.D., *College Physician*
Richard Feenstra, M.D., *College Physician*
J. Robert Van Timmeren, M.D., *College Physician*
Judith Eppinga, R.N., *College Nurse*
Anne Hein, M.A., *Coordinator, Knollcrest East Residence Center*
Barbara Johnson, M.A., *Residence Director, Bolt-Heyns-Timmer Halls*
James Arringdale, M.A., *Residence Director, Schultze-Eldersveld Halls*
Scott Melby, M.A., *Residence Director, Beets-Veenstra Halls*
Denise Peterson, B.A., *Residence Director, Boer-Bennink Halls*
Eric De Nijs, M.A., *Residence Director, Rooks-Van Dellen Halls*
Mark Eastburg, B.A., *Residence Director, Noordewier-Vander Werp Halls*

Committees

ACADEMIC AFFAIRS COMMITTEES

Academic Standards Committee, C. Stapert (1985, chairman), S. Greydanus (1987), R. Kool (1985), D. Lautenbach, A. Reynolds (1986), B. Ten Broek (1987), E. Van Vugt.
Academic Support Committee, B. Vande Kopple (1986, chairman), E. Diephouse, D. Meulenberg (1985), C. Strikwerda, J. Stuive (1985), G. Weaver (1987), G. Van Zwalenberg (1985).
College-Seminary Library Committee, C. Bult, P. De Vos, J. Hamersma (1987), E. Horchner (1985), M. Monsma, R. Van Dragt (1986), R. Wevers (1985).
Computer Services Committee, L. Nyhoff (1985, chairman), S. Anema, M. Bolt (1987), J. Clark (1985), H. De Wit, J. Streelman (1985), E. Van Der Heide (1986), G. Van Harn.
Continuing Education Committee, R. Honderd (1987, chairman), K. Blok (1987), P. Boonstra (1985), W. Joesse (1985), C. Kass, D. Oppewal (1986).

- Educational Policy Committee*, P. De Vos (chairman), J. Cooper (1985), T. Jager (1986), G. Monsma (1987), C. Otten (1986), R. Rice, H. Smit (1985), G. Van Harn, N. Wolterstorff (1985), M. Zuidema (1987).
- Graduate Studies Committee*, C. Kass (1987, chairman), D. Diephouse (1986), H. Hoeks (1986), C. Mulder (1987), C. Walhout (1985), U. Zylstra (1985), one graduate student.
- Governing Board, Calvin Center for Christian Scholarship*, D. Ratzsch (1985, chairman), Alumnus (1985), N.H. Beversluis (1985), E. Blankespoor (1985), H. Brinks (1987), P. De Vos, A. Diekema, K. Piers (1985) R. Rice, G. Spykman (1986).
- Governing Board, H. H. Meeter Center for Calvin Studies*, F. Klooster (1986, chairman), B. Armstrong (1987), C.-M. Baldwin (1987), R. Brummel, D. Cooper (1986), J. De Jong, A. Diekema, R. Kingdon (1985), H. Zwaanstra (1985).
- Interim Term Committee*, T. Rottman (1985, chairman), Er. Boevé (1987), R. Hoksbergen (1986), B. Miller (1985), C. Miller, D. Wilson (1985), C. Young (1987).
- Professional Programs Committee*, G. Van Andel (1987, chairman), R. Albers (1985), B. Klooster (1986), G. Schultze (1986), R. Start (1985), S. Van Der Wee (1987), G. Van Harn, E. Van Vugt.
- Social Research Center Governing Committee*, D. Smalligan (chairman), J. Brink (1986), G. De Blaey (1987), P. Vande Guchte.
- Teacher Education Committee*, D. Topp (1985, chairman), H. Aay (1986), H. Baron (1985), W. Brus (1985), P. De Boer (1986), C. Kass, J. Lamse (1987), P. Lucasse (1987), C. Orlebeke (1985).

BUSINESS AFFAIRS COMMITTEES

- College Store Committee*, D. Smalligan (1986, chairman), K. Johnson, C. Sinke (1987), D. Swets (1985).

COLLEGE AFFAIRS COMMITTEES

- College Relations Committee*, J. Korf (1985, chairman), M. Buma, D. Distelberg, P. Harkema, G. Mellema (1987), T. Ozinga, C. Overvoorde (1986), P. Vande Guchte, M. Van Denend, H. Vroon (1985).
- Priorities Committee*, J. Beebe (1985, chairman), R. De Bruin (1985), P. De Vos, H. De Wit, A. Diekema, K. Konyndyk (1987), K. Mannes (1985), B. Pekelder, J. Penning (1986), S. Roels (1986), D. Van Baak (1987), P. Vande Guchte, W. Van Dyk (1985).
- Special Events Committee*, S. Lambers (1985, co-chairman), M. Vande Guchte (1986, co-chairman), M. Bakker (1986), R. Blankespoor (1987), C.A. Danford (1986), D. De Young (1985), R. Jensen (1985), C. Kaiser (1987), M. Oosterbaan (1985), R. Slager (1987), J. Vanden Bosch (1987), N. Van Noord (1986), R. Wells (1987).

CULTURAL AFFAIRS COORDINATING BOARD

- Cultural Affairs Coordinating Council*, M.A. Walters (1986, chairman), K. Bratt (1987), T. Hofman (1985), A. Otten (1985), W. Stob (secretary), C. Veldheer (1985).
- Communications Board*, D. De Boer (1985), E. Driesenga (1985, *Prism*), K. Kuiper (1984, *Dialogue*), P. Oppewall (1987, secretary), Q. Schultze (1985, WCAL), M. Stob (1985, *Chimes*).
- Film Arts Committee*, R. Van Leeuwen (1986, mentor), C. Balk (1985), E. Boevé (1987), W. Stob (1985), J. Worst (1985).
- Fine Arts Guild*, M. Bolt (mentor), D. Berghuis (1985), D. Kramer (1985).

Homecoming Committee, L. Van Nuil (1985, chairman), W. Hendricks (1987), W. Stob, M. Van Denend.

Lectures Committee, G. Harper (1984, mentor), D. Dykema (1985), H. Smit (1985), M. Tjoelker (1985), D. Van Kley (1987).

FACULTY AFFAIRS COMMITTEES

Committee on Committees, A. Diekema (chairman), R. De Kock, G. Harper, S. Lambers, C. Orlebeke, H. Rienstra.

Multicultural Lectureship Committee, R. De Kock (1986, chairman), B. Class (1987), C. De Ridder, J. Dodge (1986), D. Dykema (1985), R. Otten (1985), R. Rice, L. Sweetman (consultant), K. Van Haitsma (1985).

Professional Status Committee, A. Diekema, (chairman), W. Bratt (1985), P. De Vos, J. Primus (1986), M. Vander Goot (1986), E. Van Kley (1987), P. Zwier (1987).

STUDENT AFFAIRS COMMITTEES

All-Campus Discipline Committee, S. Stehouwer (1985, chairman), L. De Lange (alternate), R. De Vries (1986), V. Kempkers (1985), C. Mulder (1985), W. Stob (secretary), R. Terborg (1986), J. Timmerman (1987), D. Zuidema (1987).

Athletics Committee, A. Bratt (1985, chairman), R. Bolt (1986), S. Kramers (1985), S. Marquardt (1985), R. Stouwie (1987), K. Wolters (1987).

Chapel Committee, L. Vos (1985, chairman), D. Cooper (secretary), A. Doorn (1985), F. Guter (1985), K. Houskamp (1985), A. Jager (1985), D. Swets (1985), S. Wiersma (1985).

Scholarships and Aids Committee, H. Holstege (1985, chairman), R. Alderink (1985), H. Bonzelaar (1987), W. De Boer (1987), S. Grit (1985), W. Hubers (secretary) D. Lautenbach, A. Leegwater (1986), C. Strikwerda.

Student Conduct Committee, A. Noteboom (1985, chairman), P. De Jong (1985), L. Stegink (1986), B. Pekelder (secretary), A. Terpstra (1985), M. Van Haitsma (1985), B. Vlieg (1985), D. Vroon (1987).

Student Life Committee C. Vos (1985, chairman), W. Boer, D. Cooper, T. Hoeksema, G. Huijenga (1987), B. Koetje (1985), W. Stob (secretary), M. Vander Werf (1985), J. White (1985), J. Youngsma (1985).

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, Edward Ericson, *acting 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
- Herman H. Broene, Ph.D.
Professor of Chemistry, Emeritus
- John Thomas Daling, M.A., Ph.D.
Professor of Psychology, Emeritus
- John Lester De Beer, M.A., Ed.D.
Professor of Education, Emeritus
- James John De Jonge, M.S., M.Mus.
Associate Professor of Music, Emeritus
- Thedford 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

Henry Peter Ippel, M.A., Ph.D.
Professor of History, Emeritus

Martin Karsten, M.S.
Associate Professor of Biology, Emeritus

Walter Lagerwey, M.A., Ph.D.
Professor of Germanic Languages, Emeritus

Charles J. Miller, Ph.D.
Professor of History, Emeritus
Dean for Academic Administration, Emeritus

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

Dorothy Westra, M.A., Ph.D.
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)
Professor of Geography and Environmental Studies

Robert J. Albers, Ph.D. (Connecticut, 1962)
Professor of Chemistry

- Samuel J. Anema, M.S. (Western Michigan, 1970)
Director of Computing Services
- Martinus A. Bakker, M.A. (University of South Africa, 1967), Drs. (Utrecht State University, 1977)
Associate Professor of Germanic Languages
- Claude-Marie Baldwin, M.A., Ph.D. (Michigan State, 1977, 1984)
Visiting Associate Professor of French
- Henry James Baron, M.A. (Michigan, 1966), Adv. Cer., Ph.D. (Illinois, 1968, 1972)
Professor of English
- John D. Beebe, M.A. (South Dakota, 1966), Ph.D. (Chicago, 1970)
Professor of Biology
- Eric H. Beversluis, M.A., Ph.D. (Northwestern, 1968, 1970)
Associate Professor of Economics and Business
- Marilyn R. Bierling, M.A. (Michigan, 1974)
Instructor in Spanish
- 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 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)
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., Ph.D. (Western Michigan, 1964, 1984)
Associate 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)
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)
Professor of Biology
Fellow, Calvin Center for Christian Studies
- Al Dirk Bratt, M.S. (Michigan State, 1957), Ph.D. (Cornell, 1964)
Professor of Biology
- Kenneth Dale Bratt, M.A. (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)
Professor of Mathematics and Computer Science
- John Harvey Brink, M.S., Ph.D. (Purdue, 1972, 1974)
Professor of Psychology
- Herbert John Brinks, M.A., Ph.D. (Michigan, 1961, 1965)
Professor of History
Curator, Colonial Origins Collection
- Jack E. Brothers M.B.A. (North Carolina 1962)
Assistant Professor of Economics and Business
- Conrad John Bult, M.A., M.A.L.S. (Michigan, 1962, 1965)
Assistant Library Director for College-Related Matters
- Linda Burden, B.S. (Western Michigan University, 1977), M.S.N. (Wayne State University, 1979)
Adjunct Instructor in Nursing
- **Ynés M. Byam, M.A. (Michigan State University, 1977)
Assistant Professor of Spanish
- Barbara Carvill, Ph.D., (Toronto, 1981)
Associate Professor of Germanic Languages
Chairman of the Department of French
- James A. Clark, M.A., Ph.D. (Colorado, 1974, 1977)
Visiting Associate 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
- G. Daniel Cloete, D.Th. (Theologische Hogeschool der Gereformeerde Kerken, Kampen, 1980)
Multicultural Lecturer
- Dale Jay Cooper, B.D., (Calvin Theological Seminary, 1968)
College Chaplain
- John W. Cooper, M.A., Ph.D., (Toronto, 1974, 1978) M.T.S. (Calvin Theological Seminary, 1983)
Associate 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
- Chloe Ann Danford, M.S. (Colorado, 1975)
Associate Professor of Nursing
- *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)
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)
Associate Professor of Economics and Business
- Mary M. Doornbos, M.S. (University of Michigan, 1983)
Instructor in Nursing
- Edward R. Douma, M.A. (Western Michigan, 1973)
Visiting Assistant Professor of Physical Education
- Esther F. Driesenga, M.S. (Michigan State, 1979)
Assistant Professor of Physical Education
- **Eugene Roy Dykema, M.B.A. (Chicago, 1968)
Professor of Economics and Business
- Johanna Duyst, M.A.L.S. (Michigan, 1973)
Librarian
- Edward E. Ericson, Jr., M.A., Ph.D. (Arkansas, 1963, 1967)
Professor of English
Acting Chairman of the Department of English
- 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)
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. (Pittsburgh, 1980)
Instructor in Philosophy
- George Graham Harper, Jr., M.A., Ph.D. (Northwestern, 1951, 1959)
Professor of English
- **George Harris, M.A. (Michigan, 1959), Ph.D. (Northwestern, 1971)
Professor of Classical Languages
Chairman of the Department of Classical Languages
Secretary of the Faculty
- Cornelius Peter Hegewald, M.A., D.A.G. (Michigan State, 1964, 1967)
Professor of Germanic Languages
Chairman of the Department of Germanic Languages
- William Cornelius Hendricks, M.Ed. (Western Washington State, 1955)
Associate Professor of Education
Coordinator of Elementary Education
- Donald R. Hettinga, M.A., Ph.D. (Chicago, 1977, 1983)
Visiting Assistant Professor of English
- Henry Jay Hoeks, B.S.A.E. (Purdue, 1958), M.C.E. (Western Theological Seminary, 1966)
Ed.D. (Columbia, 1975)
Professor of Religion and Theology
Director of the Academic Study of Religions Program
- Robert James Hoeksema, M.S.E. (Michigan, 1978)
Assistant Professor of Engineering
- Thomas Brian Hoeksema, M.A., Ph.D. (Michigan State, 1972, 1975)
Professor of Education
Coordinator of Special Education: Mentally Impaired
- Roland G. Hoksbergen, M.A. (Notre Dame, 1981)
Instructor in Economics and Business
- James M. Hollebeek, M.A., M.A. (Western Michigan, 1974, 1976), Ed.S. (Drake, 1983)
Counselor in the Broene Center
- David Jack Holquist, M.A. (Michigan, 1967), Ed.S. (Michigan State, 1974)
Associate Professor of Communication Arts and Sciences
Chairman of the Department of Communication Arts and Sciences
- Henry Holstege, Jr., M.A., Ph.D. (Michigan State, 1958, 1966)
Professor of Sociology
- Philip Cornelius Holtrop, B.D. (Calvin Theological Seminary, 1958)
Assistant Professor of Religion and Theology
- Ralph John Honderd, M.A. (Michigan State, 1966)
Associate Professor of Physical Education
- Donald R. House, M.B.A. (University of Michigan, 1952)
Assistant Professor of Economics and Business
- Carl John Huisman, M.F.A. (Michigan State, 1967)
Associate Professor of Art
- Gertrude Ann Huizenga, M.A. (Ohio State, 1963), M.Mus., Ph.D. (Michigan State, 1969, 1980)
Associate Professor of Music
- Thomas Leigh Jager, M.S., Ph.D. (Chicago, 1967, 1971)
Professor of Mathematics
- Robert Andrew Jensen, M.F.A. (Ohio, 1962)
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
- Cornie K. Kass, M.A. (Michigan, 1955), Ph.D. (Illinois, 1962)
Professor of Education
Coordinator of Special Education: Learning Disabilities
Dean for Academic Administration
- Cynthia E. Kielinen, M.S. (Boston University School of Nursing, 1972), Ed.D. (Columbia University, 1979)
Visiting Associate Professor of Nursing
Chairman of the Hope-Calvin Department of Nursing
- Gene A. Klaasen, M.A., Ph.D., (Nebraska, 1965, 1968)
Visiting Professor of Mathematics and Computer Science
- 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)
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
- W. David Laverell, M.S., Ph.D. (Lehigh, 1965, 1969), Th.M. (Westminster Seminary, 1983)
Visiting Professor of Mathematics and Computer Science
- Arie Leegwater, Ph.D. (Ohio State, 1967)
Professor of Chemistry
- Maureen Leen, B.S.N. (Madonna, 1970), M.S.N. (Wayne State, 1975)
Adjunct Assistant Professor of Nursing
- †Sanford Clay Leestma, M.A. (Pennsylvania State, 1965), Ph.D., (New Mexico State, 1969)
Professor of Mathematics and Computer Science
- Laurence L. Louters, M.S. (Minnesota, 1974)
Associate Professor of Chemistry
- 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
- Bonnie Wilma Medema, B.S. (Seattle Pacific, 1979), M.N. (Washington, 1983)
Instructor in Nursing
- Douglas K. Medema, M.S.E.E. (Washington, 1981)
Assistant Professor of Engineering
- Gregory Frank Mellema, Ph.D. (Massachusetts, 1974), M.B.A. (Michigan, 1978)
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
- 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
- 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
- Merle Mustert, M.M. (Michigan State University, 1964)
Assistant Professor of Music
- 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
- Vernon D. Nyhoff, M.S. (Kansas State, 1950)
Assistant Professor of Mathematics and Computer Science
- Donald Oppewal, M.A. (Michigan, 1951), Ph.D. (Illinois, 1961)
Professor of Education
- Peter Oppewal, M.A., Ph.D. (Michigan, 1949, 1961)
Professor of English
- 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)
Professor of Art
- Thomas J. Ozinga, M.A., Ph.D. (Michigan, 1961, 1967)
Director of College Relations

- Bernard Edward Pekelder, Th.B. (Calvin Theological Seminary, 1947), M.A. (Northwestern, 1965)
Vice President for Student Affairs
College Chaplain
- James Michael Penning, M.A., Ph.D. (Kentucky, 1974, 1975)
Professor of Political Science
- †Kirk D. Peterson, M.S.E. (Michigan, 1979)
Instructor in Engineering
- Jeffrey Robert Pettinga, M.A. (Michigan State, 1968)
Assistant Professor of Physical Education
- Kenneth Piers, B.Sc. hons. Ph.D. (Alberta, 1963, 1966)
Professor of Chemistry
Chairman of the Department of Chemistry
- Stanley Pikaart, M.A. (Western Michigan, 1971)
Assistant Professor of History
- John Henry Primus, B.D. (Calvin Theological Seminary, 1957), D.Th. (Vrije Universiteit, Amsterdam, 1960)
Professor of Religion and Theology
- Philip R. Prins, M.S. (Idaho, 1984)
Visiting Instructor in Mathematics and Computer Science
- Donald E. Pruis, M.B.A. (Michigan, 1953), C.P.A.
Professor of Economics and Business
- Delvin L. Ratzsch, M.A., Ph.D. (Massachusetts, 1974, 1975)
Associate Professor of Philosophy
- Alfred John Reynolds, M.A. (Michigan, 1951), Ph.D. (Michigan State, 1965)
Professor of Psychology
- Rodger Reid Rice, M.A., Ph.D. (Michigan State, 1962, 1968)
Professor of Sociology
Dean for the Social Sciences and for Language, Literature, and Arts
- M. Howard Rienstra, M.A., Ph.D. (Michigan, 1954, 1963)
Professor of History
Director of the H. H. Meeter Center for Calvin Studies
- †Frank Carl Roberts, B.D. (Calvin Theological Seminary, 1965), M.A., Ph.D. (Vanderbilt, 1969, 1973)
Professor of History
- Shirley J. Roels, M.B.A. (Michigan, 1977)
Assistant Professor of Economics and Business
- Theodore Allen Rottman, M.A., Ph.D. (Michigan State, 1955, 1965)
Professor of Sociology
- Darlene G. Rubingh, M.S.N. (Wayne State, 1979)
Instructor in Nursing
- Ruth K. Rus, M.Mus. (Eastman School of Music, 1951)
Associate Professor of Music
- **William A. Sanderson, B.D., S.T.M. (Faith Theological Seminary, 1950), M.A. (Washington, St. Louis, 1965)
Professor of Psychology
- Quentin J. Schultze, M.S., Ph.D. (Illinois, 1976, 1978)
Associate Professor of Communication Arts and Sciences
- Douglas J. Schuurman, M.Div. (Calvin Theological Seminary, 1980)
Instructor in Religion and Theology
- Carl James Sinke, M.S., Ph.D. (Purdue, 1951, 1954)
Professor of Mathematics
Chairman of the Department of Mathematics

- Raymond L. Slager, M.S. (Western Michigan, 1970), C.P.A., 1974
Associate Professor of Economics and Business
- Howard Jay Slenk, M.A., Ph.D. (Ohio State, 1961, 1965)
Professor of Music
Chairman of the Department of Music
- Barbara Betty Sluiter, M.A.L.S. (Michigan, 1956)
Librarian
- Donald Henry Smalligan, M.B.A., M.S.W. (Michigan, 1948, 1954)
Professor of Sociology and Social Work
Chairman of the Department of Sociology and Social Work
- **Corwin Esdert Smidt, M.A., Ph.D. (Iowa, 1971, 1975)
Associate Professor of Political Science
- *J. William Smit, M.A., Ph.D. (Michigan, 1959, 1964)
Professor of Sociology
- Robert E. Snow, M.S., Ph.D. (Indiana, 1965, 1967)
Fellow, Calvin Center for Christian Studies
- Gordon John Spykman, Th.B. (Calvin Theological Seminary, 1952), D.Th. (Vrije Universiteit, Amsterdam, 1955)
Professor of Religion and Theology
- Calvin Ray Stapert, M.A., Ph.D. (Chicago, 1968, 1973)
Professor of Music
- R. Scott Stehouwer, M.A., Ph.D. (Wayne State, 1977, 1978)
Associate Professor of Psychology
- LeRoy Dale Stegink, M.A., Ph.D. (Michigan State, 1970, 1979)
Professor of Education
Coordinator of Secondary Education
- Michael J. Stob, M.S., Ph.D. (University of Chicago, 1975)
Associate Professor of Mathematics and Computer Science
- William K. Stob, B.D., Th.M. (Calvin Theological Seminary, 1955, 1970), Ed.D. (Western Michigan, 1975)
Dean of Student Life
- Roger John Stouwie, M.A., Ph.D. (Wisconsin, 1968, 1970)
Professor of Psychology
Chairman of the Department of Psychology
- Charles Earl Strikwerda, M.A. (Wisconsin, 1969), Ph.D. (Kentucky, 1977)
Associate Professor of Political Science
Director of Academic Advising
- Leonard Sweetman, Jr., Th.B. (Calvin Theological Seminary, 1951)
Professor of Religion and Theology
- Louis Sytsma, B.S.N. (Grand Valley State, 1974), M.S.N. (Wisconsin, 1979)
Adjunct Assistant Professor of Nursing
- Gary W. Talsma, M.S. (Purdue, 1975)
Assistant Professor of Mathematics and Computer Science
- Bernard John Ten Broek, M.A., Ph.D. (Colorado, 1955, 1960)
Professor of Biology
- James A. Ten Cate, M.S. (Texas, 1983),
Instructor in Physics
- Henrietta Ten Harmsel, M.A., Ph.D. (Michigan, 1958, 1962)
Professor of English
- Robert Harold Terborg, M.A., Ph.D. (Michigan State, 1966, 1968)
Professor of Psychology
- †John Peter Tiemstra, Ph.D. (Massachusetts Institute of Technology, 1975)
Associate Professor of Economics

- Peter V. Tigchelaar, M.S., Ph.D. (Illinois, 1966, 1970)
Professor of Biology
- James R. Timmer, M.A. (Michigan, 1964), Ph.D. (Utah, 1974)
Professor of Physical Education
Chairman of the Department of Physical Education
- John Hager Timmerman, M.A., Ph.D. (Ohio University, 1971, 1973)
Professor of English
- Barbara B. Timmermans, M.S. (University of Michigan, 1983)
Instructor in Nursing
- G. Dale Topp, M.Mus., Ph.D. (Michigan, 1960, 1967)
Professor of Music
- David Bruce Tuuk, M.A. (Michigan, 1950)
Professor of Physical Education
- Glen E. Van Andel, M.S. (North Carolina, 1969)
Associate Professor of Physical Education
- David Alan Van Baak, M.A., Ph.D. (Harvard, 1975, 1979)
Associate Professor of Physics
- Randall Van Dragt, M.S. (Cornell University, 1971)
Instructor in Biology
- Marten Vande Guchte, M.Ed. (Wayne State, 1954), Ph.D. (Michigan State, 1969)
Professor of Communication Arts and Sciences
- Peter Vande Guchte, M.B.A. (Michigan, 1960), Ed.D. (Western Michigan, 1973)
Vice President for College Advancement
- William J. Vande Kopple, M.A., Ph.D. (Chicago, 1973, 1980)
Associate Professor of English
- James Vanden Bosch, M.A. (Ohio University, 1972), M.A. (Chicago Divinity School, 1975)
Associate Professor of English
- Henry Vander Goot, M.Div. (Princeton Theological Seminary, 1971), M.A., Ph.D. (St. Michael's College, University of Toronto, 1973, 1976)
Professor of Religion and Theology
- Mary Elizabeth Vander Goot, M.A., Ph.D. (Princeton, 1969, 1971)
Professor of Psychology
- Evert Van Der Heide, M.A., Ph.D. (Wayne State, 1975, 1982)
Associate Professor of Economics and Business
- Marvin L. Vander Wal, M.S.E. (University of Michigan, 1982), P.E. (State of Michigan, 1975)
Associate Professor of Engineering
- Steven John Van Der Weele, M.S., Ph.D. (Wisconsin, 1950, 1955)
Professor of English
- William Van Doorne, M.S., Ph.D. (Michigan, 1962, 1965)
Professor of Chemistry
- Gordon Lee Van Harn, M.S., Ph.D. (Illinois, 1959, 1961)
Professor of Biology
Dean for the Natural Sciences and Mathematics and for the Contextual Disciplines
- Dale Kenneth Van Kley, M.A., Ph.D. (Yale, 1964, 1970)
Professor of History
- Edwin John Van Kley, M.A., Ph.D., (Chicago, 1959, 1964)
Professor of History
- Raymond C. Van Leeuwen, M.A. (St. Michael's, 1973), B.D. (Calvin Theological Seminary, 1976)
Instructor in Religion and Theology
- Nancy Lynn Van Noord, M.A. (Michigan State, 1976)
Assistant Professor of Physical Education

- Lambert John Van Poolen, M.S.M.E., Ph.D. (Illinois Institute of Technology, 1965, 1969),
P.E. (State of Illinois, 1971)
Professor of Engineering
- Howard Jay Van Till, Ph.D. (Michigan State, 1965)
Professor of Physics
Fellow, Calvin Center for Christian Scholarship
- Ernest Van Vugt, M.A. (Michigan, 1958)
Registrar
- George Van Zwalenberg, M.A. (Florida, 1955), Ph.D. (California, Berkeley, 1968)
Professor of Mathematics
- Rita Verbrugge, M.A. (Western Michigan, 1977)
Assistant Professor of English
- John Verwolf, M.Ed. (Seattle Pacific, 1972)
Director of Placement
- *John Bos Van Zytveld, M.S., Ph.D. (Michigan State, 1964, 1967)
Professor of Physics
- †Gerard A. Venema, Ph.D. (Utah, 1975)
Professor of Mathematics
- Clarence John Vos, Th.B. (Calvin Theological Seminary, 1950), Th.M. (Westminster Theological Seminary, 1951), D.Th. (Vrije Universiteit, Amsterdam, 1968)
Professor of Religion and Theology
- Louis Arthur Vos, B.D. (Calvin Theological Seminary, 1961), D.Th. (Vrije Universiteit, Amsterdam, 1965)
Professor of Religion and Theology
Director of Preseminary Programs
- Anthony Donald Vroon, M.A. (Western Michigan, 1965)
Associate Professor of Physical Education
- **Clarence Peter Walhout, M.A. (Michigan, 1956), Ph.D. (Northwestern, 1964)
Professor of English
- Mary Ann Walters, M.A. (Michigan, 1962), Ph.D. (Michigan State, 1975)
Professor of English
- John D. Warners, M.S.T. (New Hampshire, 1963)
Assistant Professor of Mathematics and Computer Science
- Glenn David Weaver, M.Div. (Princeton Theological Seminary, 1972), M.A., Ph.D. (Princeton, 1974, 1978)
Visiting Professor of Psychology
- Evelyn June Weidenaar, M.A., M.A.L.S. (Michigan, 1958, 1967)
Librarian
- Ronald Albert Wells, M.A., Ph.D. (Boston, 1964, 1967)
Professor of History
- Johan Gerard Westra, M.A., Ph.D. (Michigan, 1953, 1972)
Professor of Political Science
- Richard Franklin Wevers, M.A., Ph.D. (Wisconsin, 1959, 1962)
Professor of Classical Languages
- James B. White, B.D., M.Div. (Westminster Seminary, 1957), Th.M. (Calvin Theological Seminary, 1969)
Associate Professor of Sociology
- Jack Wiersma, M.S. (Seattle, 1967), Ph.D. (Iowa, 1968)
Professor of Education
- Stanley Marvin Wiersma, M.S., Ph.D. (Wisconsin, 1956, 1961)
Professor of English

- Donald Reid Wilson, M.Div. (Faith Theological Seminary, 1956), M.A., Ph.D. (Chicago, 1962, 1970)
Professor of Sociology
- Karla M. Wolters, M.A. (Michigan State University, 1978)
Visiting Assistant Professor of Physical Education
- **Nicholas Paul Wolterstorff, M.A., Ph.D. (Harvard, 1954, 1957)
Professor of Philosophy
- John William Worst, M.A. (Ohio State, 1964), Ph.D. (Michigan, 1974)
Professor of Music
- Stephen J. Wykstra, M.S., Ph.D. (Pittsburgh, 1973, 1978)
Associate Professor of Philosophy
- Charles R. Young III, M.Div. (Reformed Theological Seminary, 1974), Ph.D. (University of Georgia, 1983)
Visiting Assistant Professor of Art
- Davis Alan Young, M.S. (Pennsylvania State, 1965), Ph.D. (Brown, 1969)
Professor of Geology
Fellow, Calvin Center for Christian Scholarship
- Doris Jean Zuidema, M.A. (Columbia Teachers College, 1963)
Associate Professor of Physical Education
- Marvin Albert Zuidema, M.A. (Michigan State, 1959), P.E.D. (Indiana, 1971)
Professor of Physical Education
- Paul John Zwier, M.A. (Michigan, 1951), Ph.D. (Purdue, 1960)
Professor of Mathematics
- Timothy S. Zwier, Ph.D. (Colorado, 1981)
Assistant Professor of Chemistry
- Uko Zylstra, M.Sc. (Michigan, 1968), Ph.D. (Vrije Universiteit, Amsterdam, 1972)
Professor of Biology

COOPERATING STAFF, Medical Technology

- Steven Bauserman, M.D.
Medical Director, Blodgett Memorial Medical Center School of Medical Technology
- Rita Champion, M.T. (ASCP)
Education Coordinator, St. Mary's Hospital School of Medical Technology
- Joseph Mann, M.D.
Medical Director, Butterworth Hospital School of Medical Technology
- Theodore Maycroft, M.D.
Medical Director, St. Mary's Hospital School of Medical Technology
- Shirley Selden, M.S., M.T. (ASCP)
Education Coordinator, Blodgett Memorial Medical Center School of Medical Technology
- Kathy Shannon, M.S., M.T. (ASCP),
Education Coordinator, West Suburban Hospital School of Medical Technology
- Suzanne Tomlinson, M.S., M.T. (ASCP)
Program Director, Butterworth Hospital School of Medical Technology



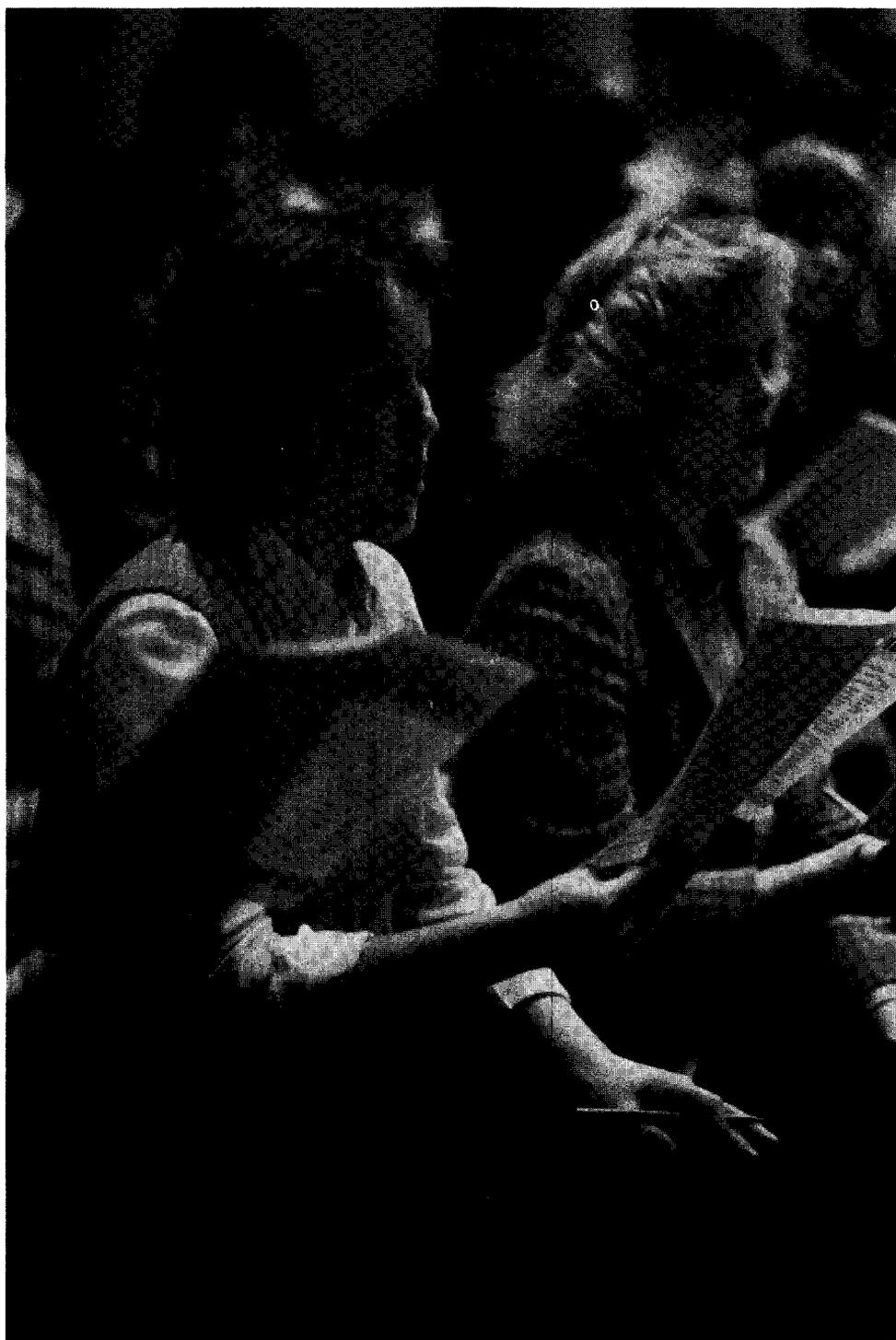


THE INDEX

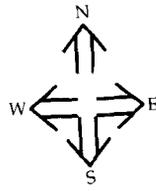
Academic Support Program	48, 82	Computer Science	105
Academic programs	43	Condition, admission on	19
Accounting	56, 67, 108	Conduct	11
Accreditation	8	Control and government	7
Administration	194	Core curriculum	44
Admissions	17	Correspondence	<i>Inside front cover</i>
Advising	14	Counseling	14
Advanced standing	18		
Agriculture	57	Dean's honor list	23
Aims of the college	7	Degrees	43, 67-75
Alumni Association	9	Dentistry	61
American College Test (ACT)	17	Dismissal	11, 24
Architecture	57	Divisions of the faculty	197
Art	83	Drama	103
Astronomy	88	Dropping of courses	22, 27
Athletics	13, 162	Dutch	107
Auditing of courses	21, 27		
Audio-visual services	7	Economics	108
Automobiles, regulations	15, 27	Education	51, 115
Awards to students	31	Education program requirements	51
		Eligibility	24
Bachelor of Arts degree	43	Employment	28
Bachelor of Fine Arts degree	67, 83	Engineering	59, 68, 121
Bachelor of Arts in Medical Technology	62	English	125
Bachelor of Science degree	43	Environmental studies	134
Bachelor of Science in Accountancy	67, 108	Examinations, exemption	17, 47
Bachelor of Science in Education	43	Examinations, course credit	17, 47
Bachelor of Science in Engineering	68, 121	Expenses	27
Bachelor of Science in Nursing	65, 71, 157		
Biology	88	Faculty	198
Board and Room	27	Faculty committees	195
Board of Trustees	193	Financial aid programs	28
Broene Center	14	Fees	27
Business Administration	58, 108	Fine arts	12
		Foreign language, self-instruction	49, 77
Calendar of the college	3, 8	Forestry	60
Changing of courses	22	French	131
Chapel	11		
Chemistry	94	Geography	134
Chicago Metropolitan Center	50	German	138
Christian Perspectives on Learning	78	Geology	134
Classical Languages	97	Germanic languages	107, 138
Classification	21	Government of the college	8
College Entrance Examination (SAT)	17	Grading system	22
Committees of the faculty	195	Graduate fellowships	15, 41
Communication Arts and Sciences	101	Graduate placement	15
Communication Disorders	59	Graduation requirements	43, 67-75
Compliance	8	Greek	97

Health insurance	13	Pre-home economics program	66
Health center	13	Premedical program	61
History of Calvin College	5	Pre-occupational therapy program	66
History	141	Preprofessional programs	56
Housing	12, 27	Preseminary program	63
Honors program	23, 48	Prizes and awards	28
		Professional programs	56
Incompletes	22	Probation	19, 22, 24
Injuries	13	Psychology	173
Instructional Resources Center	7		
Interdisciplinary courses	77	Readmission	18, 19
International student admission	20	Recreation	162
Interim courses	46	Religion and Theology	178
Interim requirements	8, 46	Religious instruction, worship	11
		Residence requirements	18, 25
Late application	17, 27	Room and board	12, 27
Late registration	17, 27		
Latin	97	Scholarships	28
Law	61	Seminary classes	21, 63
Library	6	Sociology	183
Loans	36	Social work	183
		Spanish	187
Major concentrations	46	Speech	101
Map of campus	217	Special education	55, 74, 115
Master of Arts in Christian Studies	73	Special students	19
Master of Arts in Teaching	73	Standards of the college	5, 7
Mathematics	146	Student financial aids	28
Medical technology	62	Student government	13
Medicine	61	Student load	21, 27
Ministry	63	Student loans	28
Minor concentrations	47	Student employment service	28
Motor vehicles	15	Student expenses	27
Music	150	Study-abroad programs	49
		Suggested high school programs	19
Natural Resource degree	64	Summer school	3, 8
Nursing program	20, 65, 71, 157	Supplementary concentrations	47
Orientation for new students	14	Teacher education programs	51
		Teacher certificates	25, 51
Parking	15, 27	Theater	103
Payment of fees	27	Transfers	19
Pharmacy	66	Teacher Placements	15
Philosophy	159	Trustees	193
Physical Education	162	Tuition and related fees	27
Physical Education requirements	45		
Physics	166	Visitors	21, 27
Placement bureau	15		
Political Science	171	Washington Semester program	50
Postgraduate fellowships	15, 41	Withdrawal	22, 27
Prearchitecture program	57	Worship and Christian service	11
Predental program	61		
Preengineering program	59	Year-abroad programs	49, 50

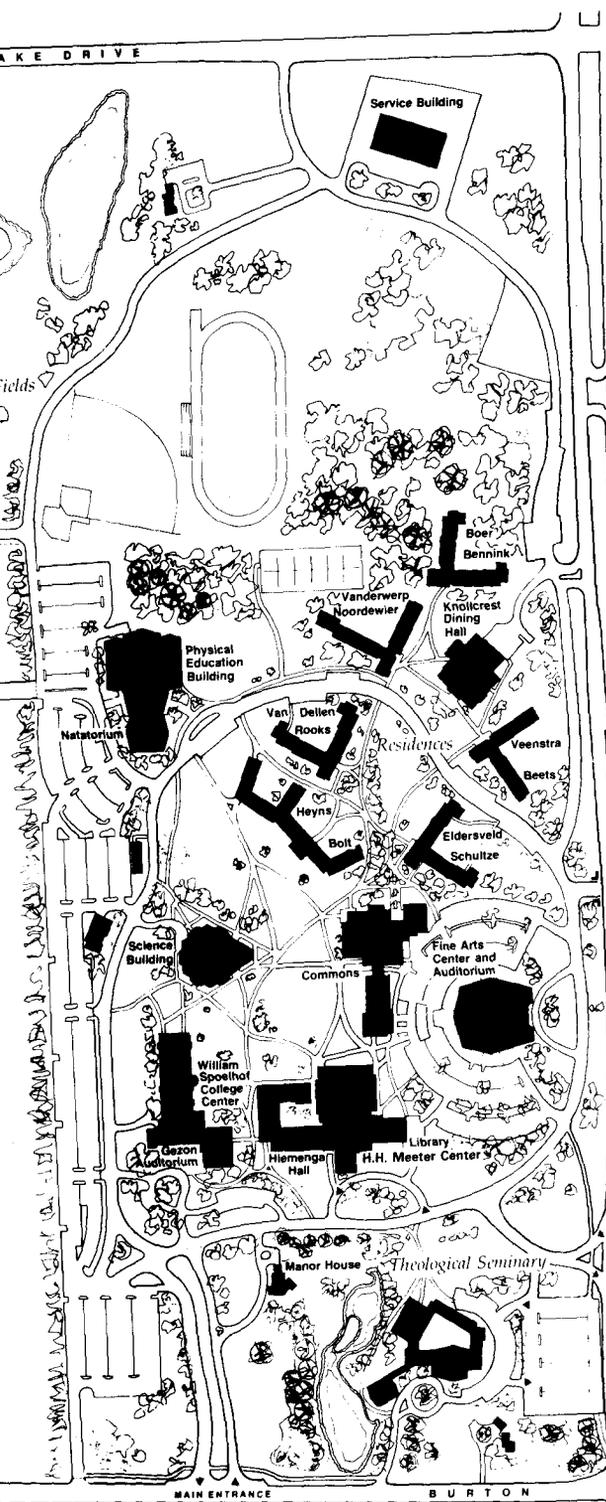




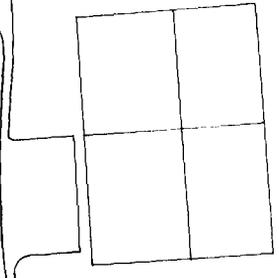
LAKE DRIVE



Calvin College



EAST BELTLINE



Knollcrest East Residences

